CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 432/GT/2020

Coram:

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

Date of Order: **5th September, 2023**

In the matter of:

Petition for approval of tariff of Anta Gas Power Station (419.33 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-110 003. **...Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited,
   Shakti Bhawan 14, Ashok Marg
   Lucknow – 226 001

2. Rajasthan Urja Vikas Nigam Limited,
   Vidyut Bhawan, Janpath,
   Jaipur-302 005

3. Tata Power Delhi Distribution Limited,
   Grid Substation, Hudson Road,
   Kingsway Camp, Delhi-110009

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

5. BSES Yamuna Power Limited,
   Shakti Kiran Building,
   Karkardooma, Delhi- 110092

6. Haryana Power Purchase Centre,
   Shakti Bhawan, Sector – VI,
   Panchkula, Haryana – 134 109

7. Punjab State Power Corporation Limited,
   The Mall, Patiala – 147 001

8. Himachal Pradesh State Electricity Board Limited,
   Kumar Housing Complex Building-II,
   Vidyut Bhawan, Shimla – 171 004

9. Power Development Department,
   Govt. of J&K, Civil Secretariat, Srinagar

10. Electricity Department (Chandigarh),
    Union Territory of Chandigarh,
    Addl. Office Building, Sector-9 D,
    Chandigarh

11. Uttarakhand Power Corporation Limited,
    Urja Bhavan, Kanwali Road,
    Dehradun – 248 001 …**Respondent**

Parties Present:

Ms. Swapna Seshadri, Advocate, NTPC
Ms. Ritu Apurva, Advocate, NTPC
Ms. Surbhi Gupta, Advocate, NTPC
Shri Anand Kumar Shrivastava, TPDDL
Ms. Ishita Jain, Advocate, TPDDL
Shri Aditya Ajay, Advocate, BSES Discoms
Shri Rahul Kinra, Advocate, BSES Discoms
Shri Aashwyn Singh, Advocate, BSES Discoms
Ms. Megha Bajpeyi, BRPL

ORDER

This petition has been filed by the Petitioner, NTPC Limited, for approval of tariff of Anta Gas based Power Station (419.33 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 419.33 MW comprises of three Gas Turbine (GT) units of 88.71 MW each and one Steam Turbine (ST) unit of 153.20

MW. The dates of commercial operation of different units of the generating station are as under:

	Capacity (MW)	Actual COD
GT (Unit-I)	88.71	1.4.1989
GT (Unit-II)	88.71	1.5.1989
GT (Unit-III)	88.71	1.7.1989
ST (Unit-IV)	153.20	1.8.1990

2. The Commission vide its order dated 10.7.2023 in Petition No. 369/GT/2020, had approved the tariff of the generating station for the period 2014-19, after truing-up exercise, based on the actual additional capital expenditure incurred for the period 2014-19. Accordingly, the capital cost and the annual fixed charges approved by order dated 10.7.2023 are as under:

Capital Cost allowed

(Rs. in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	80272.36	80786.63	81405.47	81893.12	82059.53
Add: Additional Capital Expenditure allowed	514.27	618.85	487.65	166.41	27.68
Closing Capital Cost	80786.63	81405.47	81893.12	82059.53	82087.21
Average capital cost	80529.49	81096.05	81649.30	81976.33	82073.37

Annual Fixed Charges allowed

(Rs. in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	2802.99	2901.17	3129.43	3217.36	3298.57
Interest on Loan	176.72	128.22	81.06	31.82	212.87
Return on Equity	6546.24	6595.62	6612.95	6627.89	6648.11
O&M Expenses	3700.30	3731.00	3753.90	3789.68	3832.99
Interest on Working Capital	6363.61	6665.36	6979.03	7433.89	7918.43
Total annual fixed charges approved	**19589.86**	**20021.37**	**20556.36**	**21100.63**	**21910.97**

Present Petition

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

Capital Cost claimed

(Rs in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Capital Cost	82418.55	82550.55	83362.55	84584.55	87084.55
Add: Addition during the year/period	132.00	812.00	1222.00	2500.00	0.00
Closing Capital Cost	82550.55	83362.55	84584.55	87084.55	87084.55
Average Capital Cost	**82484.55**	**82956.55**	**83973.55**	**85834.55**	**87084.55**

Annual Fixed Charges claimed

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	3325.03	3749.83	915.30	1674.90	1125.00
Interest on Loan	142.12	9.88	0.00	3.17	3.17
Return on Equity	6381.66	6408.25	4731.57	4836.43	4906.87
Interest on Working Capital	4827.40	4857.76	4815.56	4856.07	4877.19
O&M Expenses	8874.37	9271.00	9690.16	10132.78	10604.57
Annual Fixed Charges	**23550.58**	**24296.72**	**20152.59**	**21503.36**	**21516.80**

4. The Respondents, UPPCL and TPDDL have filed their replies vide their affidavits dated 2.7.2020/27.8.2021 and 26.6.2020/28.2.2023, respectively. The Petitioner has filed its rejoinder to the abovesaid replies vide affidavits dated 26.5.2021/29.10.2021 (UPPCL) and 29.10.2021/10.3.2023 (TPDDL). The Petitioner has also submitted additional information vide affidavits dated 23.6.2021 and 16.8.2022, after serving copies on the Respondents. The Petition was heard on 6.1.2023 and the Commission, after directing the Petitioner to submit certain additional information, reserved its order in the matter. In compliance, the Petitioner vide affidavit dated 13.2.2023, has filed the additional information, after serving copies on the Respondents. Taking into consideration, the submissions of the parties and the documents available on record, we now proceed to examine the claims of the Petitioner in this Petition, as stated in the subsequent paragraphs.

Capital Cost

5. Clauses (1), (3) and (5) of Regulation 19 (3) 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.

(5) The following shall be excluded from the capital cost of the existing and new projects:
(a) The assets forming part of the project, but not in use, as declared in the tariff petition;
(b) De-capitalised Assets after the date of commercial operation on account of replacement or removal on account of obsolescence or shifting from one project to another project:
Provided that in case replacement of transmission asset is recommended by Regional Power Committee, such asset shall be decapitalised only after its redeployment;
Provided further that unless shifting of an asset from one project to another is of permanent nature, there shall be no de-capitalization of the concerned assets.
(c) In case of hydro generating stations, any expenditure incurred or committed to be incurred by a project developer for getting the project site allotted by the State Government by following a transparent process;
(d) Proportionate cost of land of the existing project which is being used for generating power from generating station based on renewable energy; and
(e) Any grant received from the Central or State Government or any statutory body or authority for the execution of the project which does not carry any liability of repayment."

6. The Petitioner has claimed capital cost of Rs. 82418.55 lakh, as on 1.4.2019. However, the closing capital cost of Rs. 82087.21 lakh, as on 31.3.2019, as approved by order dated 10.7.2023, has been considered as the opening capital cost, as on 1.4.2019, for the period 2019-24, in accordance with the above regulations.

Additional Capital Expenditure

7. Regulation 25(2) and Regulation 26(1) of the 2019 Tariff Regulations provides as under:

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

(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"

8. The year-wise, projected additional capital expenditure, claimed by the Petitioner, for the period 2019-24, is summarized below:

(Rs. in lakh)

S.No.	Head of Work/ Equipment	Regulation(s)	2019-20	2020-21	2021-22	2022-23	2023-24	Total
A	**Works under Original scope, Change in law etc. eligible for ROE at normal rate**							
1	R & M of Excitation System for All Units (04 Units)	25(2)(c)	-	-	310.00	-	-	310.00
2	Installation and Commissioning of CLO2 System	26(1)(b) & 26(1)(d)	-	320.00	-	-	-	320.00
3	DDCMIS Upgradation of STG/WHRB	25(2)(c)	-	-	-	2500.00	-	2500.00
4	HMI Upgradation Work	25(2)(c)	-	350.00	-	-	-	350.00
5	High COC operation (Additional make up water system for reservoir filling)	26(1)(b)	-	-	400.00	-	-	400.00
6	R&M of CCR/SCR AC System	25(2)(c)	-	0.00	512.00	-	-	512.00

S.No.	Head of Work/ Equipment	Regulation(s)	2019-20	2020-21	2021-22	2022-23	2023-24	Total
7	AAQMS System	25(2)(c)	132.00	0.00	-	-	-	132.00
8	CCTV System for Peripheral Security	26(1)(b) and 26(1)(d)	-	132.00	-	-	-	132.00
9	CCTV for Online Effluent Monitoring by CPCB	26(1)(b)	-	10.00	-	-	-	10.00
	Total Additional Capitalisation		**132.00**	**812.00**	**1222.00**	**2500.00**	**-**	**4666.00**

<u>Additional Capital Expenditure claimed under Regulation 25(2)(c) of the 2019 Tariff Regulations</u>

R&M of Excitation System for All Units (4 Units)

9. The Petitioner has claimed additional capital expenditure of Rs. 310.00 lakh, towards R&M of Excitation system for all units (4 units) in 2021-22, under Regulation 25(2)(c) of the 2019 Tariff Regulations. In justification for the same, the Petitioner has submitted that the existing excitation system in the units of the generating station, were installed at the time of commissioning and with passage of time, the AVR converter and the associated power components have become obsolete. The Petitioner has further submitted that after the assessment of the system, the OEM has expressed that the life cycle services, support and availability of spares may not be guaranteed as the existing system has become obsolete.

10. The Respondent, UPPCL has submitted that the claim of the Petitioner may be considered on the principle laid down in order dated 18.4.2017 in Petition No. 285/GT/2014 (tariff of Auraiya Gas station for 2014-19) as under:

> *"22……the Petitioner is directed to undertake the selective R&M activities which are essential to run the generating station for another 10 year to keep the increase in per unit cost of power to bare minimum. This is in our view justified considering the gas shortage scenario in the country which poses the challenge to schedule power from gas-based station."*

11. In response, the Petitioner has submitted that it is undertaking only selective R&M activities, which are essential to run the generating station. It has also submitted that all

the expenditure has been claimed under Regulation 25(2)(c) of the 2019 Tariff Regulations, for essential R&M activities to be carried out due to obsolescence as there is no support from the OEM.

12. The matter has been considered. It is noticed that the Petitioner has furnished the copy of letter dated 24.9.2019 from the OEM (M/s ABB) recommending the replacement of the existing UNITROL-9372b-f AVR converter and the associated Power components with UNITROL-6000 based power components, due to obsolescence of technology. In view of the obsolescence of technology, the additional capital expenditure claimed by the Petitioner is allowed. However, the Petitioner has not provided the gross value of replaced assets which were put in service in the year of COD (1989). Therefore, the "assumed deletion" of Rs.61.96 lakh has been worked out, by applying the discounting rate of 5% on the current value of these assets i.e. Rs. 310.00 lakh in 2021-22.

DDCMIS Upgradation of STG/WHRB

13. The Petitioner has claimed additional capital expenditure of Rs. 2500.00 lakh, towards DDCMIS upgradation of STG/WHRB in 2022-23, under Regulation 25(2)(c) of the 2019 Tariff Regulations. In justification of the same, the Petitioner has submitted that presently ABB's control system (Procontrol P14) is installed as DDCMIS, since inception. The Petitioner has also submitted that major controls/systems covered by the Procontrol P14 are Drum Level Control, HP/LP Bypass control, Hydraulic Oil system, Vaccuum system, Boiler Feed Pumps, Condesnsate Extraction Pumps, Equipment Cooling Water system, Cooling Water system, Raw water system, makeup water system, Switchyard breakers/ isolators, bus couplers, etc. However, it has submitted that many control modules such as 81AA01, 81AA02, 81EA02, 81EB02, 83SR03, 87TS01, 88FN01, 88FT01, 88TK01, 88TU01, 88TV01, 88UB01, 88UM01, 88VA01,

88VK01, 88VP02, 88VT01, 88VU01 etc in the existing control system have become obsolete as per the Lifecycle statement issued by the OEM in May, 2019.

14. The matter has been examined. The Petitioner has furnished the copy of the letter dated 15.1.2020 received from the OEM (M/s ABB) wherein, it has recommended the replacement of the existing P14 system due to obsolescence of technology. In view of the obsolesce of technology, the additional capital expenditure claimed by the Petitioner is allowed. However, the Petitioner has not provided the gross value of replaced assets which were put in service in the year of COD (1989). Therefore, the "assumed deletion" of Rs. 475.89 lakh has been worked out, by applying the discounting rate of 5% on the current value of these assets i.e. Rs. 2500.00 lakh in 2021-22.

HMI Upgradation Work

15. The Petitioner has claimed additional capital expenditure of Rs. 350.00 lakh, towards HMI upgradation work in 2020-21, under Regulation 25(2)(c) of the 2019 Tariff Regulations. In justification of the same, the Petitioner has submitted that the 'Existing Controls Systems' software are running on Microsoft Windows XP/Server 2003 operating systems. It has also submitted that M/s Microsoft has ended its support for Microsoft Windows XP/ Server 2003 operating systems in 2014 and in the absence of any support from Microsoft, these systems have been deprived from Windows updates, which are critical for security from harmful viruses, spyware and other malicious software. The Petitioner has stated that after assessment of the systems, the OEM vide its letter dated 2.11.2017 has recommended the upgradation of the Control System software along with the underlying IT infrastructure.

16. The matter has been examined. The Petitioner has furnished the copy of the letter dated 2.11.2017 from the OEM (M/s ABB) with regard to the end of support for Windows

XP/Server 2003 from Microsoft. Though the Petitioner has mentioned about the "Existing Controls Systems" it has not submitted the details as to which all existing control system or part of system would be affected from such obsolescence . However, considering the fact that Microsoft has ended support and security updates for Windows XP/ server 2003 operating systems, the additional capitalisation claimed by the Petitioner, is **allowed**. The Petitioner is however, directed to submit the complete details, such as systems that will be affected from such obsolescence, at the time of truing up of the tariff. The Petitioner has also not furnished the gross value of replaced assets which were put in service in the year of COD (1989). Therefore, the "assumed deletion" of Rs. 73.45 lakh has been worked out, by applying the discounting rate of 5% on the current value of these assets i.e. Rs. 350.00 lakh in 2020-21.

R&M of CCR/SCR AC System

17. The Petitioner has claimed additional capital expenditure of Rs. 512.00 lakh, towards R&M of Constant Current Regulator (CCR) /SCR (Silicon Control Rectifier) AC System in 2021-22, under Regulation 25(2)(c) of the 2019 Tariff Regulations. In justification of the same, the Petitioner has submitted that existing air conditioning systems in the central control room is based on AC-70 series compressors installed by M/s Kirloskar. The Petitioner has further submitted that the OEM vide its letter dated 14.7.2017 has informed that it has discontinued the manufacturing of AC-70 series compressors and can avail the technical support and supply of spares for the AC system only till 31.12.2018. In view of completion of its useful life and the unavailability of spares, the Petitioner has submitted that it is replacing the existing system.

18. The matter has been considered. The Petitioner has furnished the copy of the letter dated 14.7.2017 from the OEM (M/s Kirloskar Pneumatic Company Limited) with

regard to the obsolescence of technology. In view of the obsolesce of technology, the additional capital expenditure claimed by the Petitioner **is allowed**. However, the Petitioner has not furnished the gross value of replaced assets which were put in service in the year of COD (1989). Therefore, the "assumed deletion" of Rs. 102.33 lakh has been worked out, by applying the discounting rate of 5% on the current value of these assets i.e. Rs. 512.00 lakh in 2021-22.

AAQMS System (AAQMS)

19. The Petitioner has claimed additional capital expenditure of Rs.132.00 lakh, towards AAQMS system in 2019-20, under Regulation 25(2)(c) of the 2019 Tariff Regulations. In justification of the same, the Petitioner has submitted that existing the AAQMS was installed in 2004-05. However, it has submitted that the Rajasthan State Pollution Control Board (RSPCB) vide its letter dated 14.5.2019 has directed the Petitioner to transmit real-time data of AAQMS to RSPCB and CPCB portals. The Petitioner has further submitted that the existing AAQMS lacks the feature of online data transmission as directed vide the said letter of RSPCB. Accordingly, the Petitioner has stated that the capitalization claimed pertains to AAQMS with the feature of online data transmission to RSPCB.

20. The matter has been considered. The Petitioner has furnished the copy of letter dated 14.5.2019, from RSPCB with regard to the configuration of CAAQM with CPCB/ RSPCB for monitoring the ambient air quality and for publishing the AQI. Though the Petitioner has claimed the projected additional capital expenditure under Regulation 25(2)(c) of the 2019 Tariff Regulations, it has not furnished any document indicating the obsolescence of technology. However, considering the fact that the projected expenditure claimed is towards the compliance of the directions of the RSPCB, the claim

of the Petitioner is **allowed.** The Petitioner is directed to submit the certificate of obsolescence at the time of truing up of tariff. The Petitioner has also not furnished the gross value of replaced assets which were put in service in the year of COD (1989). Therefore, the “assumed deletion” of Rs. 29.09 lakh has been worked out, by applying the discounting rate of 5% on the current value of these assets i.e. Rs. 132.00 lakh in 2019-20.

Additional Capital Expenditure claimed under Regulation 26(1)(b) and (d) of the 2019 Tariff Regulations

Installation and Commissioning of CLO2 System

21. The Petitioner has claimed additional capital expenditure of Rs. 320.00 lakh, towards the Installation and Commissioning of CLO_2 system in 2020-21, under Regulation 26(1)(b) and Regulation 26(1)(d) of the 2019 Tariff Regulations. In justification of the same, the Petitioner has submitted that the CLO_2 Plant is being installed to enable a much safer way of producing CLO2 on site, by use of commercial grade HCl and sodium chlorite, instead of present practice of Chlorine gas, being dozed directly. It has stated that Chlorine gas is very hazardous and may prove fatal in case of leakage and handling & storage of same involves risk to the life of public at large and in the interest of public safety, the chlorine dozing system is now being replaced by CLO2 system, which is much safer and less hazardous than chlorine. The Petitioner has further submitted that at its Kudgi project, Department of Factories, Boiler, Industrial Safety and Health, Govt of Karnataka has directed the Petitioner to replace highly hazardous gas chlorination system with ClO2 system. SPCB, Odisha while issuing consent to establish in case of Darlipall Station has asked the Petitioner to explore the possibility of installing CLO2 system instead of Chlorine gas system. In view of the directions of the various statutory authorities in different states of the country and for

enhancing the safety of O&M personnel, the Petitioner has stated that it is replacing the chlorination system with CLO2 system. Additionally, the Petitioner vide additional submission in affidavit dated 16.8.2022 has submitted that Ministry of Labour and Employment, GOI, released the “National Policy on Safety, Health and Environment at Workplace” in February 2009 which is pertinent to the case of the Petitioner requiring installation of CLO2 to meet the policy provisions. Further, the Petitioner has also submitted that this requirement is also in line with “Draft Safety, Health and Working Conditions Code 2018”, which was put up by the Ministry of Labour and Employment in March 2018 inviting comments/suggestions of various stakeholders and clause 6(1)(a) and 6(1)(d) of “The Occupational Safety, Health and Working Conditions Code, 2020” notified by Ministry of Law & Justice, GoI vide Gazette Notification dated 29.9.2020. The Petitioner has further submitted that, the installation of CLO2 Plant taken up by the Petitioner in place of earlier Chlorine dozing system, is a Change of process taken up for prevention and management of chemical accidents in accordance with the various provisions and objectives of the “National Disaster Management Guidelines – Chemical Disasters” released by the NDMA, GOI in April 2007.

22. The matter has been considered. The Petitioner has submitted that for Kudgi project of the Petitioner, the Government of Karnataka, had directed the Petitioner to replace the highly hazardous gas chlorination system with CLO2 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 STP station of the Petitioner. This letter, in no manner, can be termed as a change in law event or for compliance with any existing law in respect of this generating station (Anta GPS) warranting the additional capitalization of the expenditure. As regards the claim of the Petitioner, we find no specific direction or

advice from any Governmental or statutory authorities as regards the requirement of this item i.e. (chlorine dozing system to be replaced by Chlorine Dioxide (ClO_2) system) for safety and security of the generating station. In view of this, the projected additional capital expenditure claimed by the Petitioner is not allowed.

CCTV System for Peripheral Security

23. The Petitioner has claimed additional capital expenditure of Rs. 132.00 lakh, in 2020-21, towards CCTV System for Peripheral Security, under Regulation 26(1)(b) and Regulation 26(1)(d) of the 2019 Tariff Regulations. In justification of the same, the Petitioner has submitted that the MOP, GOI vide letters dated 27.2.2019 and 23.10.2019 had instructed to maintain high level of alertness and strengthen security arrangements at vital installations.

24. The matter has been considered. The Petitioner has furnished the copy of the letter dated 27.2.2019 from MOP, GOI with regard to maintaining high level of alertness and strengthening security arrangements. It is evident from the letters that the MOP, GOI had requested the Petitioner to review and strengthen the security of vital installations and critical infrastructure, but has made no reference to this generating station or for installation of CCTV. Regulation 26 (1) (d) of the 2019 Tariff Regulations provides for consideration of additional capitalisation towards the safety and security of the plant as advised or directed by any appropriate governmental instrumentality or statutory authorities responsible for national or internal security. Considering the fact that there has been no recommendation for the installation of the CCTV system for Peripheral Security in the generating station, but has only been a general instruction to review security, the projected additional capital expenditure of Rs. 132.00 lakh claimed in 2020-21 is **not allowed**.

CCTV for Online Effluent Monitoring by CPCB

25. The Petitioner has claimed additional capital expenditure of Rs.10.00 lakh in 2020-21, towards CCTV for Online Effluent Monitoring by CPCB, under Regulation 26(1)(b) of the 2019 Tariff Regulations. In justification of the same, the Petitioner has submitted that RSPCB vide its letter dated 2.5.2018, has directed for the installation of PTZ camera(s) for the generating station, to enable the remote monitoring of emission and effluent discharge.

26. The submissions have been considered. The Petitioner has furnished the copy of the letter dated 2.5.2018 from RSPCB with regard to the installation of PTZ camera, for the generating station. Since the additional expenditure claimed is for compliance to the directions of the statutory authority, the claim of the Petitioner **is allowed.**

High COC operation (Additional make up water system for reservoir filling)

27. The Petitioner has claimed additional capital expenditure of Rs. 400.00 lakh, in 2021-22, towards High COC operation (Additional make up water system for reservoir filling) in 2021-22, under Regulation 26(1)(b) of the 2019 Tariff Regulations. In justification of the same, the Petitioner has submitted that MoEF&CC vide notification dated 7.12.2015, has directed to reduce the water consumption in its thermal power plants including the generating station. Accordingly, the Petitioner has decided to increase Cycle of Concentration (COC) at this generating station, through dosing of various chemicals such as Sodium Molybdate, HEDP, PBTC & polymeric dispersant in condenser cooling water system. The Petitioner has submitted that these chemicals shall adversely affect the potability of water, so filling of reservoir from CW pump discharge line needs to be discontinued. The Petitioner has further submitted that the

projected capitalization pertains to implementation of additional make up water system for reservoir filling and is aimed at water conservation.

28. The matter has been considered. The Petitioner has furnished the copy of the MoEF&CC notification dated 7.12.2015 and has also submitted that the capitalization is aimed at water conservation. However, the Petitioner has not submitted the existing water consumption and target water consumption along with relevant details towards the amount of savings in water consumption after implementation of the scheme. Since the necessity of the scheme along with the change in law event, which necessitates the expenditure, has not been established, the additional capital expenditure claimed by the Petitioner is not allowed. However, the Petitioner is granted liberty to raise the issue with proper justification and documentary evidence at the time of truing-up and same will be considered in accordance with the relevant regulations.

Assumed Deletion

29. As per the consistent methodology adopted by the Commission, the expenditure on replacement of assets, if found justified, is allowed for the purpose of tariff provided that the capitalisation of the said asset, is followed by the decapitalisation of the gross value of the old asset. However, in certain cases, where the de-capitalisation is proposed to be affected during the future year of capitalisation of the new asset, the decapitalization of the old asset for the purpose of tariff is shifted to the very same year in which the capitalization of the new asset is allowed. Such decapitalization which is not a book entry in the year of capitalization is termed as 'Assumed Deletion'. Therefore, the methodology of arriving at the fair value of the decapitalised asset in comparison to the cost of the new asset, we have considered the value of the asset under consideration on COD as 100 and escalated it @5% per annum till the year during which

additional capital expenditure is claimed against replacement of the same. The amount claimed for additional capital expenditure against the asset, is multiplied by the derived ratio from the above two values i.e., value in year of COD divided by the value in capitalized year.

30. The Petitioner, has claimed R & M of excitation system for all the 4 Units, DDCMIS upgradation of STG/WHRB, HMI upgradation work. R&M of CCR/SCR AC system and AAQMS system, on replacement basis, but has not furnished the decapitalized value of the old assets. Accordingly, the decapitalized value of the assets/works has been calculated in terms of the above-mentioned methodology. Accordingly, the 'Assumed Deletions' allowed for the purpose of tariff is as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
29.09	73.45	164.30	475.89	0.00

31. Based on the above discussions, the projected additional capital expenditure allowed for the generating station for the period 2019-24, is summarized as under:

Additional Capital Expenditure Eligible for Normal ROE

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24	Total
Admitted projected additional capital expenditure (A)	132.00	360.00	822.00	2500.00	0.00	3814.00
Less: De-capitalization of assets (B)	29.09	73.45	164.30	475.89	0.00	742.72
Net projected additional capital expenditure allowed (on cash basis) (C) = (A-B)	102.91	286.55	657.70	2024.11	0.00	3071.28

Capital cost allowed for the period 2019-24

32. Accordingly, the capital cost approved for the generating station is summarised below:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Capital Cost (A)	82087.21	82190.13	82476.67	83134.38	85158.49

	2019-20	2020-21	2021-22	2022-23	2023-24
Add: Admitted Additional capital expenditure (B)	102.91	286.55	657.70	2024.11	0.00
Closing Gross Block (C) = (A+B)	82190.13	82476.67	83134.38	85158.49	85158.49
Average Gross Block (D) = (A+C)/2	**82138.67**	**82333.40**	**82805.53**	**84146.43**	**85158.49**

Debt-Equity Ratio

33. 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."

34. The Commission vide its order dated 10.7.2023 in Petition No. 369/GT/2020 had considered the gross loan and equity amounting to Rs. 48436.55 lakh and Rs. 33650.66 lakh, respectively, as on 31.3.2019, and the same has been considered as the opening gross loan and equity as on 1.4.2019. In terms of Regulation 18 of the 2019 Tariff Regulations, the debt-equity ratio of 70:30 has been applied on year-wise admitted additional capital expenditure for arriving at the additions to loan and equity during each year of the period 2019-24. The details of debt-equity ratio considered for the purpose of computation of tariff is as under:

(Rs. in lakh)

Funding	**Capital cost as on 1.4.2019**		**Additional Capital Expenditure during 2019-20 and 2020-21**		**Decapitalization during 2019-20 and 2020-21**		**Capital cost as on 1.4.2021**	
	Amount	**(%)**	**Amount**	**(%)**	**Amount**	**(%)**	**Amount**	**(%)**
Debt (A)	48436.56	59.01%	344.40	70.00%	51.27	50.00%	48729.69	59.08%
Equity (B)	33650.66	40.99%	147.60	30.00%	51.27	50.00%	33746.99	40.92%
Total (C) = (A) + (B)	**82087.22**	**100.00%**	**492.00**	**100.00%**	**102.54**	**100.00%**	**82476.68**	**100.00%**

***variation due to rounding off.*

	Amount
Closing equity as on 31.3.2021* (a)	33746.99
Equity in excess of 30% (b)	9003.99
Equity admissible as on 1.4.2021** (a-b)	**24743.00**

** Represents 40.92% of capital cost of Rs. 82476.68 lakh as on 01.04.2021.*
*** Represents 30% of capital cost of Rs. 82476.68 lakh as on 01.04.2021.*

Funding	**Capital cost as on 1.4.2021**		**Additional Capital Expenditure in 2021-22, 2022-23 and 2023-24**		**Decapitalization in 2021-22, 2022-23 and 2023-24**		**Capital cost as on 31.3.2024**	
	Amount	**(%)**	**Amount**	**(%)**	**Amount**	**(%)**	**Amount**	**(%)**
Debt (A)	48729.69	59.08%	2325.40	70.00%	320.09	50.00%	50734.99	59.58%
Equity (B)	33746.99***	40.92%	996.60	30.00%	320.09	50.00%	34423.50****	40.42%
Total (C) = (A) + (B)	**82476.68**	**100.00%**	**3322.00**	**100.00%**	**640.18**	**100.00%**	**85158.50**	**100.00%**

****Equity to be serviced as on 1.4.2021 is Rs. 24743 lakh (₹33746.99 lakh – Rs. 9003.99 lakh i.e. Equity in excess of 30%)*
*****Equity to be serviced as on 31.3.2024 is Rs. 25419.51 lakh (₹34423.50 lakh – Rs. 9003.99 lakh i.e. Equity in excess of 30%)*

35. As the generating station has completed its useful life as on 1.4.2021, in accordance with the first proviso to Regulation 18(3) of 2019 Tariff Regulations, the equity component in excess of 30% of the capital cost should not be considered for the purpose of tariff. The Petitioner in Form-1(II), has also claimed the Return on Equity (ROE) after reducing the equity of Rs. Rs.9232.15 lakh, from the gross equity of Rs. 34240.91 lakh as on 1.4.2021. Accordingly, in terms of first proviso to Regulation 18(3) of the 2019 Tariff Regulations, equity to be considered for the purpose of tariff as on 1.4.2019, works out to Rs. 24743.00 lakh as indicated in the table above. The gross normative loan of Rs. 48729.69 lakh and the net equity of Rs. 24743.00 lakh has been considered for the purpose of tariff, as on 1.4.2021. Further, the admitted projected additional capital expenditure has been allocated in the debt: equity ratio of 70:30.

Return on Equity

36. Regulation 18(3) of the 2019 Tariff Regulations provide as under:

> *"18(3) Debt-Equity Ratio*
> *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."*

37. Regulation 30 and Regulation 31 of the 2019 Tariff Regulations provide 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 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:

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."

38. As observed above, equity from 2021-22 onwards has been restricted to 30% as per first proviso to Regulation 18(3) of the 2019 Tariff Regulations. The additional capital expenditure, within the original scope of work, is calculated as per methodology provided in Regulations 30 and Regulation 31 of the 2019 Tariff Regulations. For equity base, ROE has been calculated by grossing up of ROE, during the period 2019-24. The Petitioner has claimed tariff considering the rate of ROE as 18.782% i.e., base rate of 15.50% and MAT rate of 17.472% (i.e., MAT rate of 15% + Surcharge of 12% + HEC of 4%) for the period 2019-24. Accordingly, ROE has been allowed based on projected additional capital expenditure and has been worked out as under:

(Rs. in lakh)

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Notional Equity - Opening	33650.66	33675.72	33746.99	33911.45	34423.50
Less: Adjustment to equity in terms of 1st proviso to Regulation 18 (3)	0.00	0.00	9003.99	9003.99	9003.99
Normative Equity-Opening (A)	33650.66	33675.72	24743.00	24907.45	25419.51
Addition of Equity due to additional capital expenditure (B)	25.06	71.27	164.45	512.06	0.00
Normative Equity-Closing (C) = (A) + (B)	33675.72	33746.99	24907.45	25419.51	25419.51
Average Normative Equity (D) = (A+C)/2	33663.19	33711.36	24825.23	25163.48	25419.51
Return on Equity (Base Rate) (E)	15.500%	15.500%	15.500%	15.500%	15.500%
Effective Tax Rate (F)	17.472%	17.472%	17.472%	17.472%	17.472%
Rate of Return on Equity (Pre-Tax) (G) = (E)/(1-F)	18.782%	18.782%	18.782%	18.782%	18.782%
Return on Equity (Pre-Tax) annualized (H) = (D)x(G)	**6322.62**	**6331.67**	**4662.67**	**4726.21**	**4774.29**

Interest on Loan

39. 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."*

40. Interest on loan has been computed as under:

a. Gross normative loan amount to Rs. 48436.56 lakh, as on 31.3.2019, as considered in order dated 10.7.2023, has been considered as on 1.4.2019;

b. Cumulative repayment amounting to Rs. 45992.31 lakh, as on 31.3.2019, as considered in order dated 10.7.2023 has been considered as on 1.4.2019;

c. Accordingly, the net normative opening loan as on 1.4.2019 works out as Rs. 2444.25 lakh;

d. The repayments for the respective years of the 2019-24 tariff period, has been considered equal to the depreciation allowed for that year.

e. The Petitioner has claimed interest on loan by applying the weighted average rate of interest of 7.68% for 2019-20 and 8.45% for the period 2020-24. The same has been considered for the purpose of tariff. The Petitioner, is however, directed to submit documentary evidence for the rate of interest considered in Form-13 and repayment schedule of loan, at the time of truing up of tariff.

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

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Gross opening loan (A)	48436.56	48514.41	48729.69	49222.94	50734.99
Cumulative repayment of loan upto previous year (B)	45992.31	48514.41	48729.69	48729.69	48729.69
Net Loan Opening (C) = (A) - (B)	2444.25	0.00	0.00	493.25	2005.31
Addition due to additional capital expenditure (D)	77.86	215.27	493.25	1512.06	0.00
Repayment of Loan during the period (E)	2536.65	252.00	41.97	118.69	171.82
Less: Repayment adjustment on a/c of decapitalization (F)	14.54	36.73	82.15	237.94	0.00
Net Repayment of Loan during the period (G) = (E) - (F)	2522.11	215.27	0.00	0.00	171.82
Net Loan Closing (H) =(C) +(D) -(G)	0.00	0.00	493.25	2005.31	1833.49
Average Loan (I) = (C+H)/2	1222.13	0.00	246.63	1249.28	1919.40
Weighted Average Rate of Interest on loan (J)	7.68%	8.45%	8.45%	8.45%	8.45%
Interest on Loan (K) = (I)*(J)	**93.88**	**0.00**	**20.84**	**105.56**	**162.19**

Depreciation

42. 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."

43. The generating station shall complete its useful life of 25 years during the year 2020-21. Though the Petitioner has claimed projected additional capital expenditure during the period 2019-24, it has not provided any details for life extension of the generating station. Accordingly, the additional expenditure claimed during the period 2019-24 has been allowed with the weighted average rate of depreciation at 5.28%.

44. For the assets admitted upto 31.3.2019, depreciation has been worked out considering the admitted capital cost of Rs. 82087.21 lakh, as on 1.4.2019 and the cumulative depreciation amounting to Rs. 67156.01 lakh, as on 31.3.2019, as considered in order dated 10.7.2023, has been retained for the purpose of tariff. Since, as on 1.4.2019, the used life of the generating station is more than 12 years,

depreciation has been calculated based on the remaining depreciable value (up to 90% of existing gross block of the generating system) to be recovered over the balance useful life up to 31.3.2021 and w.e.f. 1.4.2021, no depreciation is allowed on existing asset. As discussed above, the Petitioner has not provided any details for life extension of the generating station, depreciation for additional capital expenditure (new additions) during the period 2017-24 is allowed at the normative rate of depreciation of 5.28% as specified in the 2019 Tariff Regulations. Accordingly, depreciation allowed for the generating station is as under:

(A) For assets capitalised upto 31.3.2019

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Capital Cost (A)	82087.21	82058.13	82058.13	81893.83	81417.94
Decapitalization (B)	29.09	73.45	164.30	475.89	0.00
Closing Capital Cost (C) =(A)-(B)	82058.13	82058.13	81893.83	81417.94	81417.94
Average Capital Cost (D) = ((A)+(C))/2	82072.67	82058.13	81975.98	81655.89	81417.94
Value of Freehold Land included in Avg capital cost (E)	113.17	113.17	113.17	113.17	113.17
Depreciable Value (F) = ((D)-(E))*90%	73763.55	73750.46	73602.59	73174.30	73174.30
Cumulative Depreciation at the beginning (G)	67156.01	70459.78	73750.46	73602.59	73174.30
Depreciation adjustment on a/c of decapitalization (H)	26.18	66.11	147.87	428.30	0.00
Net Cumulative Depreciation after adjustment for de-capitalization (I) = (G)-(H)	67129.83	70393.67	73602.59	73174.30	73174.30
Remaining Depreciation Value (J) = (F)-(I)	6607.54	3290.68	0.00	0.00	0.00
Balance useful life of the asset (K)	2.00	1.00	0.00	0.00	0.00
Depreciation (L) = (J)/(K)	**3303.77**	**3290.68**	**0.00**	**0.00**	**0.00**

(B) For assets capitalised after 1.4.2019

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Capital Cost	0.00	132.00	492.00	1314.00	3814.00
Add: Projected Additional capital expenditure	132.00	360.00	822.00	2500.00	0.00
Closing Capital Cost	132.00	492.00	1314.00	3814.00	3814.00
Average Capital Cost (A)	66.00	312.00	903.00	2564.00	3814.00

	2019-20	2020-21	2021-22	2022-23	2023-24
Aggregated Depreciable Value (B) = (A)*90%	59.40	280.80	812.70	2307.60	3432.60
Weighted Average Rate of Depreciation (WAROD) (C)	5.28%	5.28%	5.28%	5.28%	5.28%
Combined Depreciation during the year/ period (D) = (A) * (C)	**3.14**	**14.66**	**41.97**	**118.69**	**171.82**
Cumulative depreciation at the end of the year	3.14	17.80	59.77	178.45	350.27

Operation & Maintenance Expenses

45. Regulation 35(1)(3) of the 2019 Tariff Regulations provides for the O&M expense norms for combined cycle gas turbine power generating stations as under:

(Rs. in lakh/MW)

2019-20	2020-21	2021-22	2022-23	2023-24
17.58	18.20	18.84	19.50	20.19

46. The normative O&M expenses claimed by the Petitioner is as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
7371.82	7631.81	7900.18	8176.94	8466.27

47. As the year-wise O&M expenses claimed by the Petitioner for the period 2019-24 as above, is in accordance with Regulation 35(1)(1) of the 2019 Tariff Regulations, the same is allowed.

Water Charges, Security Charges and Capital Spares

48. Regulation 35(6) of the 2019 Tariff Regulations provides for the following:

"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;

Provided further that the generating station shall submit the assessment of the security requirement and estimated expenses;

Provided also that the generating station shall submit the details of year-wise actual capital spares consumed at the time of truing up with appropriate justification for incurring the same and substantiating that the same is not funded through compensatory allowance as per Regulation 17 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 or Special Allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization."

Water Charges

49. The Water charges claimed by the Petitioner for the period 2019-24, in terms of the first proviso to Regulation 35(6) of the 2019 Tariff Regulations is as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
56.75	56.75	56.75	56.75	56.75

50. The Petitioner has furnished the details in respect of water charges namely the type of cooling water system, water consumption, rate of water charges as applicable for the year 2018-19 as under:

	Remarks
Type of Plant	Gas
Type of cooling water system	Closed Cycle
Consumption of water	336.40 lakh kilolitre
Rate of water charges	Rs. 20 per cusec
Water watch & ward charges	Rs. 42.27 lakh
Total Water Charges	Rs. 56.05 lakh

51. The Petitioner has claimed water charges for Rs. 56.75 lakh as water charges for each year of the period 2019-24. The Petitioner has also submitted that the claim for water charges, is subject to retrospective adjustment, based on actuals, at the time of truing up of tariff for the period 2019-24. The Petitioner has also submitted that the actual water charges incurred for the years 2019-20 and 2020-21 are as under:

(Rs. in lakh)

2019-20	2020-21
42.06	204.2

52. The matter has been considered. The Petitioner has claimed the actual water charges incurred for the years 2019-20 and 2020-21. However, the Petitioner has not submitted any documentary evidence to verify the water charges claimed during 2019-20 and 2020-21. The Petitioner has also submitted that there is liability of Rs 13.39 lakh and Rs 167.40 lakh provisioned in the books of accounts during 2019-20 and 2020-21,

respectively, towards water charges, on account of the balance water charges yet to be billed by CAD, Govt of Rajasthan (GoR). Hence, the actual water charges of Rs. 28.67 lakh and Rs. 36.8 lakh (after excluding the provisioned amounts) during the years 2019-20 and 2020-21 has been considered and allowed. For the remaining period (2021-22 to 2023-24), the estimated water charges, as submitted by the Petitioner for the respective years, has been considered, subject to the condition that the Petitioner shall, at the time of truing-up of tariff, submit actual bills for water charges, along with other relevant details in terms of the Regulation 35(1)(6) of the 2019 Tariff Regulations. Accordingly, the water charges allowed for the period 2019-24 is as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
28.67	36.80	56.75	56.75	56.75

Security Charges

53. The Petitioner has claimed projected security expenses, in terms of the second proviso to Regulation 35(6) of the 2019 Tariff Regulations, as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
1445.81	1582.45	1733.24	1899.10	2081.55

54. However, the Petitioner has claimed actual security charges incurred during the years 2019-20 and 2020-21 as under:

(Rs. in lakh)

2019-20	2020-21
1454.80	1286.30

55. The matter has been considered. The Petitioner has claimed actual security charges incurred during the years 2019-20 and 2020-21 and the same have been considered and allowed, subject to prudence check at the time of truing-up of tariff. As regards the projected security expenses claimed for the period 2021-22 to 2023-24, we are inclined to allow actual security expenses of Rs. 1286.30 lakh incurred in 2020-21,

without any escalation, subject to the condition that the Petitioner shall, at the time of truing-up of tariff, submit actual bills along with other relevant details in terms of the said proviso to Regulation 35(1)(6) of the 2019 Tariff Regulations. Accordingly, security expenses allowed are as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
1454.80	1286.30	1286.30	1286.30	1286.30

Capital spares

56. The Petitioner has not claimed any capital spares, 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(6) of the 2019 Tariff Regulations, based on actual consumption of capital 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.

57. Accordingly, the total O&M expenses allowed for the period 2019-24, is summarised as under:

(Rs. in lakh)

		2019-20	2020-21	2021-22	2022-23	2023-24
Installed Capacity (MW) (A)		419.33	419.33	419.33	419.33	419.33
O&M Expenses under Reg.35(1) in Rs lakh / MW (B)	Claimed	17.58	18.20	18.84	19.50	20.19
	Allowed	**7371.82**	**7631.81**	**7900.18**	**8176.94**	**8466.27**
Water Charges (in Rs lakh) (C)	Claimed	56.75	56.75	56.75	56.75	56.75
	Allowed	**28.67**	**36.80**	**56.75**	**56.75**	**56.75**
Security Expenses (in Rs lakh) (D)	Claimed	1445.81	1582.45	1733.24	1899.10	2081.55
	Allowed	**1454.80**	**1286.30**	**1286.30**	**1286.30**	**1286.30**
Capital Spares (in Rs lakh) (E)	Claimed	0.00	0.00	0.00	0.00	0.00
	Allowed	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total O&M Expenses as allowed (including Water Charges and Capital Spares Consumed) (F) = (B+C+D)	Claimed	**1520.13**	**1657.40**	**1808.82**	**1975.34**	**2158.48**
	Allowed	**8855.29**	**8954.91**	**9243.22**	**9519.98**	**9809.32**

Operational Norms

58. The operational norms claimed by the Petitioner, are in accordance with the provisions of Regulation 49 of the 2019 Tariff Regulations, and hence allowed for the period 2019-24, as under:

Normative Annual Plant Availability Factor (NAPAF) (%)	85.00%
Gross Station Heat Rate (kcal/kwh)	2075.00
Auxiliary Power Consumption (%)	2.75%

Interest on Working Capital

59. Regulation 34(1)(b) of 2019 Tariff Regulations provides as under:

"34. Interest on Working Capital: (1) The working capital shall cover:

(b) For Open-cycle Gas Turbine/Combined Cycle thermal generating stations:

(i) Fuel cost for 30 days corresponding to the normative annual plant availability factor, duly taking into account mode of operation of the generating station on gas fuel and liquid fuel;

(ii) Liquid fuel stock for 15 days corresponding to the normative annual plant availability factor, and in case of use of more than one liquid fuel, cost of main liquid fuel duly taking into account mode of operation of the generating stations of gas fuel and liquid fuel;

(iii) Maintenance spares @ 30% of operation and maintenance expenses including water charges and security expenses;

(iv) Receivables equivalent to 45 days of capacity charge and energy charge for sale of electricity calculated on normative plant availability factor, duly taking into account mode of operation of the generating station on gas fuel and liquid fuel; and

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

60. Clause (3) and (4) of Regulation 34 of the 2019 Regulations provides as under:

"(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 Components and Energy Charges in working capital

61. The Petitioner has claimed the following fuel components as part of working capital, based on the price and GCV of APM gas, RLNG and Naptha for the preceding

three months i.e., October 2018, November 2018 and December 2018 and the mode of operation between APM gas, RLNG and Naptha (Liquid) projected for the generating station is 66.45%, 30.94% and 2.61%, respectively. Accordingly, based on the details submitted by the Petitioner in Form-15, the fuel cost for 30 days for computation of working capital is allowed as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Fuel for corresponding to NAPAF30 days	13339.52	13339.52	13339.52	13339.52	13339.52
Cost of Liquid Fuel ccorresponding to NAPAF for 15 days	415.23	415.23	415.23	415.23	415.23

62. The Petitioner has claimed ECR of 5.34 Rs/kWh for 2019-24 based on the weighted average price and GCV of the Domestic gas, RLNG and Naptha used for the operation of the generating station, during the preceding three months i.e., October 2018, November 2018 and December 2018 and the mode of operation as under:

Landed Fuel Cost (Domestic Gas)	Rs/1000SCM	13840.87
(%) of Fuel Quantity	(%)	66.45%
Landed Fuel Cost (RLNG)	Rs/1000SCM	40298.24
(%) of Fuel Quantity	(%)	30.94%
Landed Fuel Cost (Liquid Fuel)	Rs/Kl	67996.83
(%) of Fuel Quantity	(%)	2.61%
Secondary fuel oil cost (ex-bus)	Rs/kWh	NA
Energy Charge Rate (Gas) ex-bus-CC	Rs/kWh	3.214
Energy Charge Rate (LNG) ex-bus-CC	Rs/kWh	9.297
Energy Charge Rate (Naptha ex-bus-CC	Rs/kWh	12.749
Weighted Average Energy Charge Rate ex-bus-CC	Rs/kWh	**5.345**

63. Based on the operational norms, the price and GCV of the generating station during the preceding months i.e., October 2018, November 2018 and December 2018, the ECR, for the purpose of working capital has been worked out and allowed for the period 2019-23 as under:

(Rs. per kWh)

2019-24 (Claimed)	2019-24 (Allowed)
5.345	5.345

64. Energy charges for 45 days, on the basis of weighted average GCV and weighted average cost, for the purpose of interest on working capital has been worked outs as follows:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
20009.28	20009.28	20009.28	20009.28	20009.28

Working Capital for O&M Expenses

65. O&M expenses for the purpose of working capital claimed by the Petitioner is as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
739.53	772.58	807.51	844.40	883.71

66. Regulation 34(1)(b)(v) of the 2019 Tariff Regulations provides for O&M expenses for one month, including water charges and security expenses. Accordingly, the O&M expenses for working capital is allowed as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
737.94	746.24	770.27	793.33	817.44

Working Capital for Maintenance Spares

67. The Petitioner has claimed maintenance spares in working capital as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
2662.31	2781.30	2907.05	3039.83	3181.37

68. Maintenance spares for the purpose of working capital in accordance with Regulation 34(1)(b)(iii) of the 2019 Tariff Regulations *(30% of the O&M expenses, including water charges and security expenses)* is worked out and allowed as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
2656.59	2686.47	2772.97	2855.99	2942.80

Working Capital for Receivables

69. Receivables equivalent to 45 days of capacity charges and energy charges for the purpose of working capital has been worked out and allowed as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Energy Charge for 45 days corresponding to NAPAF	20009.28	20009.28	20009.28	20009.28	20009.28
Fixed Charge for 45 days corresponding to NAPAF	2877.42	2847.56	2234.04	2298.10	2348.89
Total	**22886.70**	**22856.84**	**22243.31**	**22307.37**	**22358.16**

Rate of Interest on Working Capital

70. In accordance with Regulation 34(4) of the 2019 Tariff Regulations, the rate of interest on working capital has been considered as 12.05% (i.e., 1-year SBI MCLR of 8.55% (as on 01.04.2019) + 350 bps) for the year 2019-20 11.25% (i.e. 1 year SBI MCLR of 7.75% (as on 01.04.2020) + 350 bps) for the year 2020-21 and 10.50% (i.e. 1 year SBI MCLR of 7.00% (as on 01.04.2021) + 350 bps) for the period 2021-24. Accordingly, the interest on working capital has been considered as 12.05% for 2019-20, 11.25% for 2020-21 and 10.50% for the period 2021-22 to 2023-24. Accordingly, interest on working capital is worked out and allowed as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Working Capital for Cost of fuel- 30 Days	13339.52	13339.52	13339.52	13339.52	13339.52
Working Capital for Cost of Liquid Fuel for 15 days	415.23	415.23	415.23	415.23	415.23
Working Capital for Maintenance Spares - 30% of O&M	2656.59	2686.47	2772.97	2855.99	2942.80
Working Capital for Receivables corresponding to NAPAF - 45 Days	22886.70	22856.84	22243.31	22307.37	22358.16
Working Capital for O&M expenses - 1 month	737.94	746.24	770.27	793.33	817.44
Total Working Capital (I) = (A+B+C+D+E+F)	**40035.97**	**40044.29**	**39541.29**	**39711.44**	**39873.15**
Rate of Interest (G)	12.05%	11.25%	10.50%	10.50%	10.50%
Total Interest on Working capital (H) = ((I)*(G)	**4824.33**	**4504.98**	**4151.84**	**4169.70**	**4186.68**

Annual Fixed Charges approved for the period 2019-24

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

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation (A)	3306.90	3305.34	41.97	118.69	171.82
Interest on Loan (B)	93.88	0.00	20.84	105.56	162.19
Return on Equity (C)	6322.62	6331.67	4662.67	4726.21	4774.29
Interest on Working Capital (D)	4824.33	4504.98	4151.84	4169.70	4186.68
O&M Expenses (E)	8855.29	8954.91	9243.22	9519.98	9809.32
AFC (F = A+B+C+D+E)	**23403.03**	**23096.90**	**18120.54**	**18640.14**	**19104.30**

72. The annual fixed charges allowed as above, are subject to truing-up in terms of Regulation 13 of the 2019 Tariff Regulations.

Application filing fees and Publication charges

73. The Petitioner has sought reimbursement of fees paid by it for filing the tariff petition for the period 2019-24 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.

74. 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 for recovery of statutory taxes, levies, duties, cess etc. levied by the statutory authorities in accordance with the 2019 Tariff Regulations.

75. Petition No. 432/GT/2020 is disposed of in terms of the above.

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