CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 485/GT/2020

Coram:

Shri P.K. Pujari, Chairperson
Shri Arun Goyal, Member
Shri Pravas Kumar Singh, Member

Date of Order: 10th June, 2022

IN THE MATTER OF

Petition for approval of tariff of Vindhyachal Super Thermal Power Station Stage-II (1000 MW) for the period from 1.4.2019 to 31.3.2024.

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. Madhya Pradesh Power Management Company Limited,
   Shakti Bhawan, Vidyut Nagar, Jabalpur – 482 008

2. Maharashtra State Electricity Distribution Company Limited,
   Prakashgad, Bandra (East), Mumbai – 400 051

3. Gujarat Urja Vikas Nigam Limited,
   Vidyut Bhawan, Race Course, Vadodara – 390 007

4. Chhattisgarh State Power Distribution Company Limited,
   P.O. Sundar Nagar, Dangania, Raipur – 492 013

5. Electricity Department,
   Government of Goa, Vidyut Bhawan, Panji, Goa – 403 001

6. DNH Power Distribution Corporation Limited,
   UT of Dadra & Nagar Haveli, Silvasa

7. Electricity Department,
   Administration of Daman & Diu, Daman – 396 210 **….Respondents**

Parties Present:
Shri Venkatesh, Advocate, NTPC
Shri Siddharth Joshi, Advocate, NTPC
Shri Abhiprav Singh, Advocate, NTPC
Shri Rishub Kapoor, Advocate, NTPC
Shri Aashwyn Singh, Advocate, NTPC
Shri A.S. Pandey, NTPC
Shri Parimal Piyush, NTPC
Shri Anurag Naik, MPPMCL

ORDER

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

Unit	Actual COD
Unit-I	1.7.2000
Unit-II/Generating Station	1.10.2000

2. The Commission vide its order dated 6.2.2017 in Petition No. 327/GT/2014 had approved the tariff of the generating station for the 2014-19 tariff period. Subsequently, in Petition No. 241/GT/2020 filed by the Petitioner for truing-up of tariff of the generating station, for the 2014-19 tariff period, the Commission vide its order dated 7.5.2022 approved capital cost and the annual fixed charges as under:

Annual Fixed Charges allowed

(Rs. in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	5635.60	5744.47	5802.67	5863.57	5852.64
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	14924.00	15073.60	15109.14	15085.00	15080.30
Interest on Working Capital	5440.84	5500.43	5539.69	5697.72	5778.21
O&M Expenses	18291.69	19056.10	19751.75	20795.70	22096.69
Compensation Allowance	200.00	200.00	500.00	500.00	500.00
Special Allowance	0.00	0.00	0.00	0.00	0.00
Total	**44492.12**	**45574.60**	**46703.25**	**47942.00**	**49307.84**

Capital Cost allowed

(Rs. in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	252976.29	254383.84	255591.48	255586.54	254774.80
Add: Additional capital expenditure	1407.55	1207.64	(-) 4.94	(-) 811.75	(-) 716.07
Closing Capital Cost	**254383.84**	**255591.48**	**255586.54**	**254774.80**	**254058.73**
Average Capital Cost	253680.07	254987.66	255589.01	255180.67	254416.76

<u>Present Petition</u>

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

Annual Fixed Charges claimed

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	6319.69	6421.73	6823.96	7623.17	8113.64
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	14579.02	14613.40	14711.14	14867.70	14940.78
Interest on Working Capital	4755.41	4805.84	4861.79	4926.67	4985.00
O&M Expenses	25029.88	25962.69	26935.97	27950.62	28997.65
Total	**50683.99**	**51803.66**	**53332.85**	**55368.16**	**57037.06**

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	258384.05	259098.05	259604.05	262488.05	265082.05
Add: Addition during the year/ period	714.00	506.00	2884.00	2594.00	0.00
Less: De-capitalization during the year/ period	0.00	0.00	0.00	0.00	0.00
Less: Reversal during the year/ period	0.00	0.00	0.00	0.00	0.00

Add: Discharges during the year/ period	0.00	0.00	0.00	0.00	0.00
Closing capital cost	**259098.05**	**259604.05**	**262488.05**	**265082.05**	**265082.05**
Average capital cost	258741.05	259351.05	261046.05	263785.05	265082.05

(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/ period	0.00	0.00	525.00	0.00	0.00
Less: De-capitalization during the year/ period	0.00	0.00	0.00	0.00	0.00
Less: Reversal during the year/ period	0.00	0.00	0.00	0.00	0.00
Add: Discharges during the year/ period	0.00	0.00	0.00	0.00	0.00
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 has filed its reply vide affidavit dated 16.6.2021 and the Petitioner vide affidavit dated 29.6.2021 has filed its rejoinder to the said reply. The Respondent, MPPMCL has filed its reply vide affidavit dated 15.7.2021 and the Petitioner vide affidavit dated 13.8.2021 has filed its rejoinder to the said reply. The Petitioner has also filed certain additional information vide affidavit dated 12.5.2021 and 29.6.2021, respectively. This Petition was heard along with Petition No. 241/GT/2020 (truing up tariff of the generating station for the 2014-19 tariff period), through video conferencing, on 24.8.2021 and the Commission reserved its order in the matter. Based on the submissions of the parties and the documents available on record, we proceed for approval of tariff of the generating station for the 2019-24 tariff period, in this Petition, on prudence check, as stated in the subsequent paragraphs.

Capital Cost

5. Regulation 19(1) 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. 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."*

6. The annual fixed charges claimed by the Petitioner, is based on opening capital cost of Rs.258384.05 lakh. However, the Commission vide its order dated 7.5.2022 in Petition No. 241/GT/2020 had approved the closing capital cost of Rs.254058.73 lakh, on cash basis, as on 31.3.2019. Accordingly, in terms of Regulation 19(3) of the 2019 Tariff Regulations, the capital cost of Rs.254058.73 lakh, on cash basis, as on 31.3.2019, has been considered as the opening capital cost, as on 1.4.2019.

Additional Capital Expenditure

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

> *"25. Additional Capitalization 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 Capitalization 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 Modernization (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-capitalization 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 decapitalization 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-capitalization takes place with corresponding adjustments in cumulative depreciation and cumulative repayment of loan, duly taking into consideration the year in which it was capitalized."

8. The year-wise, projected additional capital expenditure claimed by the Petitioner are summarized and examined below:

(Rs. in lakh)

	Regulation	2019-20	2020-21	2021-22	2022-23	2023-24
(A) Works within original scope, Change in law etc. eligible for ROE at normal Rate						
Ash Dyke Works	25(1)(c) & 25(1)(g)	714.00	506.00	1700.00	1275.00	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
Sub-Total (A)		**714.00**	**506.00**	**2884.00**	**2594.00**	**0.00**
(B) Works beyond original scope excluding additional capitalization due to Change in law eligible for ROE at Weighted Average Rate of Interest (WAROI)						
Integrated Security System	26(1)(d)	0.00	0.00	525.00	0.00	0.00
Sub-Total (B)		**0.00**	**0.00**	**525.00**	**0.00**	**0.00**
Projected additional capital expenditure claimed		**714.00**	**506.00**	**3409.00**	**2594.00**	**0.00**

(a) Ash Dyke Works

9. The Petitioner has claimed projected additional capital expenditure of Rs.714.00 lakh in 2019-20, Rs.506.00 lakh in 2020-21, Rs.1700.00 lakh in 2021-22 and Rs.1275.00 lakh in 2022-23 towards Ash dyke raising works under Regulation 25(1)(c) read with Regulation 25(1)(g) of the 2019 Tariff Regulations. In justification of the same the Petitioner has submitted that expenditure claimed under this head, is a part of ongoing raising work of existing ash dyke and is within the original scope. It has also submitted that as the existing capacity of ash dyke is envisaged to get exhausted accordingly, the raising of the ash dyke is necessarily required for increasing its capacity for further disposal of ash generated from the instant station.

10. The Respondent, MPPMCL has submitted that MOEFCC notification 7.12.2015 has made it mandatory to ensure 100% ash utilization by the generating company within two years of date of notification. It has also stated that even prior to this, MOEF&CC has issued various notifications (dated 3.11.2009) to ensure ash utilization by coal-based power generators. It has further submitted that when the generating company has to ensure 100% ash utilization, then there was no requirement for ash dyke raising. It has

also submitted have also pointed out that the Petitioner, while on the one hand is charging fly ash transportation cost, it has, on the other hand, claimed expenditure towards ash dyke raising. It has also submitted that Regulation 25(1)(g), which is applicable for raising of ash dyke as a part of ash disposal system, has become redundant, as MOEF&CC notification has made it obligatory on the generators to ensure 100% ash utilizations instead of its disposal and therefore, the claim is not maintainable. The Petitioner in its rejoinder has submitted that ash dyke raising is a work under the original scope carried out periodically during the life of the plant to ensure continuous and sustainable operation of the pant. It has also stated that the raising of ash dyke is executed in a phased manner at intermittent intervals during the life of the plant as and when necessitated. It has also submitted that at any time during the operation of the plant, the rate of generation of fly ash, could be much higher than the rate of utilization of fly ash, in which case, the unutilized ash needs to be diverted to ash dyke, for a safe disposal of ash and for continuous operation of the plant. The Petitioner has further submitted that the utilization of wet ash takes place from ash disposed in ash dyke only and the capital expenditure on this count, is necessary for the smooth operation of the plant.

11. The matter has been considered. In our view, the ash generation and ash disposal is a continuous process to be carried out from time to time during the operating life of the plant, in order to ensure the successful running of the plant. The expenditure claimed also form part of the original scope of work of the project. It is also noticed that the Petitioner in its submissions in Petition No.241/GT/2014 (approval of tariff of the generating station for 2014-19 tariff period) has indicated that it has no plans for phasing out the generating station in future. Accordingly, we allow the Petitioner's claim for additional capital expenditure under Regulation 25(1)(g) of the 2019 Tariff Regulations.

(b) Cycle of Concentration

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

13. The Respondent, MPPMCL has submitted that CEA had issued the said publication in January, 2012 and the proposal of the Petitioner is after a lapse of about ten years, under the pretext of treating the same as change in law, specially, when the plant is about to complete its useful life. Accordingly, the Respondent has submitted that in the interest of justice the Petitioner's claim may be disallowed and the Petitioner may be advised to cover such expenditure from the O&M expenses if need be , as it does not qualify as an event of change in law.

14. The matter has been considered. It is observed that the Petitioner had filed various petitions in respect of its generating stations, including Petition No. 519/MP/2020 (for this

generating station) for approval of additional expenditure due to installation of Emission Control Systems. One of the issues involved in these petitions, was the reduction (minimization) of water consumption albeit on account of the MoEF& CC notification dated 7.12.2015, for which the Petitioner has been granted liberty to approach the Commission at a later stage. Accordingly, the Commission in its order dated 28.4.2021 in Petition No. 519/MP/2020, based on the submissions of the Petitioner, had observed that the Petitioner was meeting the water consumption norms at present. As the water consumption of the generating station is within the limits specified by the norms notified by MOEF&CC and keeping in view that the report of CEA relied upon by the Petitioner is of the year 2010, we are not inclined to allow the additional capital expenditure claimed by the Petitioner under this head. The Petitioner is, however, granted liberty to approach the Commission with proper justification/ details for the additional capital expenditure claimed along with the benefits, if any, accruing to the beneficiaries on this count, at the time of truing up of tariff of the generating station. The Petitioner may also claim the same in Petition to be filed subsequently on basis of liberty granted to it vide order dated 28.4.2021 in Petition No. 519/MP/2020. Similar view has been taken by the Commission in its order dated 31.1.2022 in Petition No. 401/GT/2020, filed by the Petitioner for approval of tariff of Vindhyachal STPS, Stage-I (6 x 210 MW) for the 2019-24 tariff period.

(c) 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 (ClO_2) system, which is much safer and less hazardous than chlorine. In the proposed scheme ClO_2 shall be produced on site by use of commercial grade HCl and Sodium Chlorite and accordingly avoids handling and storage risk. Further, at Kudgi NTPC project the Department of Factories, Boiler, Industrial Safety and Health, Government of Karnataka has asked NTPC to consider replacement of highly hazardous gas Chlorination system with ClO_2 system. SPCB, Odisha while issuing consent to establish in case of Darlipalli Station has asked NTPC to explore the possibility of installing ClO_2 system instead of Chlorine gas system. The Petitioner also submitted that for safety of public, NTPC is replacing the Chlorination system with ClO_2 system. The Petitioner has added 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) in terms of section 6(1)(a) and section 6(1)(d) of "The Occupational Safety, Health and Working Conditions Code, 2020" notified by the Ministry of Law & Justice, Government of India. The Respondent, MPPMCL has submitted that the Petitioner's claim under this head under Regulation 26(1)(b) read with 26(1)(d) is highly unjustified the expenditure claimed being not part of the original scope of work. Further, there is no incidence of change in law or compliance of any existing law in the instant matter which can warrant quoting of regulation 26(1)(b). Further, Petitioner is misinterpreting Regulation 26(1)(d) as it is applicable only for security and safety related expenses if advised or directed by statutory authority, for which petitioner has not submitted any proof. It also submitted that the directions of authority of Karnataka cannot be construed to mean to be applicable in Madhya Pradesh as change in law. It also submitted that this is an operational issue and plant is operating smoothly for last 20 years and there appears no justification for the claimed expenditure, however, if NTPC still wishes to install it, to take care of operational issues, the expenditure must be catered from O&M expenditure being operational issue. The Petitioner vide its rejoinder has submitted that the expenditure claimed is of capital nature and have become necessary to execute in view of change in law/higher safety and security of plant.

16. We have considered the matter. 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 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 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. Also, the request of SPCB, Odisha to the Petitioner, to explore the possibility of installing ClO_2 system for Darlipalli station, cannot be considered, for this generating station, for grant of relief to the Petitioner. 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 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. Similar claim of the Petitioner in respect of tariff petitions for other generating stations of the Petitioner for the 2019- 24 tariff period has not been allowed by the Commission in its various orders. In view of this, the projected additional capital expenditure claimed by the Petitioner is not allowed.

(d) Integrated Security System

17. The Petitioner has claimed projected additional capital expenditure of Rs.525.00 lakh in 2021-22 for Integrated Security System (ISS), under Regulation 26(1)(d) of the 2019 Tariff Regulations. In justification for the same, the Petitioner has submitted that it is for enhancement and automation of security at the power project, in view of consistent threat as per reports from external agencies. The Petitioner has submitted that, in collaboration with CISF, the Petitioner has prepared a comprehensive multilayer e-security system, to be installed in various power stations across the country. The Petitioner has also stated that the ISS proposed to be installed in the generating station during the 2019-24 tariff period, shall not only enhance the reliability of the security system, but will also help rationalize the security manpower in the generating station. The Petitioner has also attached a copy of the communication in this regard with DG, CISF. Further, the Petitioner has also attached a copy of MOP, GOI letter dated 23.10.2019 directing all CPSU's including the Petitioner to strengthen the security of vital installations.

18. The Respondent, MPPMCL has submitted that the claim of the Petitioner is not maintainable as Regulation 26(1)(d) is applicable only for security and safety related expenses, if advised or directed by statutory authorities. It has stated that the documents furnished by the Petitioner do not reveal any such direction by appropriate statutory authorities. It has submitted that since the Petitioner has not furnished proper

documentary proof to substantiate its claim, the same may be disallowed. It has added that the Petitioner may meet the expenses on this count from the normative O&M expenses or the Special allowance allowed to the generating station.

19. The matter has been considered. The Petitioner in support of its claim for projected additional capital expenditure has submitted that it has received letter dated 23.10.2019 from MOP, GOI mandating the enhancement and automation of security at power stations, in view of consistent threat to various vital installations and infrastructure including the power stations, based on reports of external agencies. In our view, the MOP, GOI, has mandated the enhancement and automation of security at power stations, based on threat perception to vital installations, as received from external agencies. Also, the expenditure for this asset/ item will not only enhance the reliability of security system, but will also help in rationalizing the security manpower of the generating station. In this background, we allow the projected additional capital expenditure claimed by the Petitioner under Regulation 26(1)(d) of the 2019 Tariff Regulations.

20. Based on the above, the projected additional capital expenditure allowed, subject to truing up, for the 2019-24 tariff period is summarized as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
(A) Works within original scope, Change in Law etc. eligible for ROE at Normal Rate					
Ash Dyke Works	714.00	506.00	1700.00	1275.00	0.00
Sub-total (A)	**714.00**	**506.00**	**1700.00**	**1275.00**	**0.00**
(B) Works beyond original scope excluding add-cap due to Change in Law eligible for ROE at Weighted Average Rate of Interest (WAROI)					
Integrated Security System	0.00	0.00	525.00	0.00	0.00
Sub-Total (B)	**0.00**	**0.00**	**525.00**	**0.00**	**0.00**
Projected additional capital expenditure allowed	**714.00**	**506.00**	**2225.00**	**1275.00**	**0.00**

Capital Cost allowed for the 2019-24 tariff period

21. Based on the above, the capital cost allowed for the purpose of tariff for the period 2019-24 is as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Capital Cost	254058.73	254772.73	255278.73	257503.73	258778.73
Add: Projected additional capital expenditure	714.00	506.00	2225.00	1275.00	0.00
Closing Capital Cost	**254772.73**	**255278.73**	**257503.73**	**258778.73**	**258778.73**
Average Capital Cost	254415.73	255025.73	256391.23	258141.23	258778.73

Debt Equity Ratio

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

"18. Debt-Equity Ratio: (1) For a 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 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.

23. The Petitioner has claimed gross normative loan of Rs.180868.83 lakh and equity of Rs.77515.22 lakh as on 1.4.2019 and has considered debt-equity ratio of 70:30 for funding of projected additional capital expenditure claimed during the 2019-24 tariff period. The Commission vide its order dated 7.5.2022 in Petition No. 241/GT/2020 has considered gross normative loan and equity of Rs.177841.11 lakh and Rs.76217.62 lakh, respectively as on 31.3.2019, and the same has been retained as on 1.4.2019 for the purpose of tariff. Further, the projected additional capital expenditure approved above has been allocated to debt and equity in the ratio of 70:30, subject to truing up. Accordingly, the debt-equity ratio is worked out as under:

	As on 1.4.2019 ***(Rs. in lakh)***	**(%)**	**Projected additional capital expenditure during the 2019-24 tariff period** ***(Rs. in lakh)***	**(%)**	**As on 31.3.2024** ***(Rs. in lakh)***	**(%)**
Debt	177841.11	70.00	3304.00	70.00	181145.11	70.00
Equity	76217.62	30.00	1416.00	30.00	77633.62	30.00
Total	**254058.73**	**100.00**	**4720.00**	**100.00**	**258778.73**	**100.00**

Return on Equity

24. Regulation 30 and Regulation 31 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.

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%.

(3) The generating company or the transmission licensee as the case may be shall true up the grossed up rate of return on equity at the end of every financial year based on actual tax paid together with any additional tax demand including interest thereon duly adjusted for any refund of tax including interest received from the income tax authorities pertaining to the tariff period 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."

25. 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 projected additional capital expenditure claimed under original scope of work, change in law etc. for the 2019-24 tariff period. 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 2.34%, with effective tax rate of 17.472% for the 2019-24 tariff period. The same has been considered, without grossing up of WAROI for the purpose of tariff. Accordingly, ROE has been worked out as under:

***(a) Return on Equity at Normal Rate**:*

(Rs. in lakh)

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Normative Equity – Opening	76217.62	76431.82	76583.62	77093.62	77476.12
Addition of Equity due to additional capital expenditure	214.20	151.80	510.00	382.50	0.00
Normative Equity – Closing	76431.82	76583.62	77093.62	77476.12	77476.12
Average Normative Equity	76324.72	76507.72	76838.62	77284.87	77476.12
Return on Equity (Base Rate)	15.500%	15.500%	15.500%	15.500%	15.500%
Effective Tax Rate	17.4720%	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) - (annualized)	**14335.31**	**14369.68**	**14431.83**	**14515.64**	**14551.56**

(b) Return on Equity at WAROI Rate:

(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
Rate of Return on Equity (WAROI)	2.340%	2.340%	2.340%	2.340%	2.340%
Return on Equity (Pre-tax) - (annualized)	**0.00**	**0.00**	**1.84**	**3.69**	**3.69**

Interest on loan

26. 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."

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

i) The gross normative loan amounting to Rs.177841.11 lakh has been retained as on 1.4.2019;

ii) Cumulative repayment of Rs.177841.11 lakh as on 31.3.2019 as considered in order dated 7.5.2022 in Petition No. 241/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 be 'NIL';

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; and

vi) The Petitioner has claimed interest on loan considering weighted average rate of interest of 2.34% during the 2019-24 tariff period, which is same as approved for 2018-19, in order dated 7.5.2022 in Petition No. 241/GT/2020. Since, the actual loan for 2019-20 is 'nil' accordingly, in terms of above Regulation, the last available weighted average rate of interest has been considered for the purpose of tariff.

28. 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	177841.11	178340.91	178695.11	180252.61	181145.11
B	Cumulative repayment of loan upto previous year	177841.11	178340.91	178695.11	180252.61	181145.11
C	Net Loan Opening (A-B)	0.00	0.00	0.00	0.00	0.00
D	Addition due to additional capital expenditure	499.80	354.20	1557.50	892.50	0.00
E	Repayment of loan during the year	499.80	354.20	1557.50	892.50	0.00
F	Net Loan Closing (C+D-E)	0.00	0.00	0.00	0.00	0.00
G	Average Loan [(C+F)/2]	0.00	0.00	0.00	0.00	0.00
H	Weighted Average Rate of Interest on Loan	2.3400%	2.3400%	2.3400%	2.3400%	2.3400%
I	Interest on Loan (GxH)	0.00	0.00	0.00	0.00	0.00

Depreciation

29. 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 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 up to 31.3.2019 from the gross depreciable value of the assets.

(7) The generating company or the transmission license, 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."

30. The cumulative depreciation and freehold land amounting to Rs.189153.01 lakh and Rs.2167.80 lakh, as on 31.3.2019, as considered in order dated 7.5.2022 in Petition

No. 241/GT/2020 has been retained as on 1.4.2019. The Petitioner has not considered cost of IT equipment and software while calculating depreciable value and hence, the same has been considered as "nil". Accordingly, the balance depreciable value before providing depreciation for the year 2019-20 works out to Rs.37870.13 lakh. Since, the elapsed life of the generating station as on 1.4.2019 (i.e. 18.63 years) exceeds 12 years from effective station COD (i.e. 16.08.2000) the depreciation for the 2019-24 tariff period has been computed by spreading of the remaining depreciable value over the balance useful life. Necessary calculations in support of depreciation are as under:

(Rs. in lakh)

		2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
A	Average Capital Cost	254415.73	255025.73	256391.23	258141.23	258778.73
B	Value of freehold land included above	2167.80	2167.80	2167.80	2167.80	2167.80
C	Depreciable value [(A-B) x 0.9]	227023.14	227572.14	228801.09	230376.09	230949.84
D	Remaining depreciable value at the beginning of the year (C – Cumulative depreciation at the end of the preceding year)	37870.13	32478.72	27665.12	22916.66	16700.29
E	No. of completed years at the beginning of the year	18.63	19.63	20.63	21.63	22.63
F	Balance useful life at the beginning of the year (25 – E)	6.38	5.38	4.38	3.38	2.38
G	**Depreciation during the year (A/F)**	5940.41	6042.55	6323.45	6790.12	7031.70
H	Cumulative depreciation at the end (Cumulative depreciation at the end of the preceding year + H)	195093.42	201135.97	207459.43	214249.55	221281.25

<u>O&M Expenses</u>

31. The O&M expenses claimed by the Petitioner is 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	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**

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

<u>Water Charges</u>

33. The first proviso to Regulation 35(1)(6) of the 2019 Tariff Regulations provides for claim towards water charges, 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:*
>
> *xxx,*
> *xxxxx."*

34. The actual water charges claimed by the Petitioner and allowed by the Commission vide order dated 7.5.2022 in Petition No. 241/GT/2020, for the 2014-19 tariff period is as under:

(Rs. in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
1867.96	1784.93	1671.75	1571.04	1622.74

35. In terms of Regulation 35(1)(6) of the 2019 Tariff Regulations, the water charges shall be allowed separately based on the water consumption depending upon the type of plant, type of cooling water system etc., subject to prudence check. The details in respect of water charges for the 2019-24 tariff period, as furnished 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
Consumption of water*	149 MCM
Rate of water charges*	Rs.5.50/m^3
Total water charges**	Rs.1622.74 lakh

* as per truing up Petition filed for the generating station for 2018-19.

36. 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

37. However, subsequently the Petitioner vide its affidavit dated 29.6.2021 has furnished the actual water charges of the generating station for the years 2019-20 and 2020-21 is Rs.1555.08 lakh and Rs.1550.83 lakh, respectively.

38. The Respondent, MSEDCL has submitted that the Petitioner has not provided any valid justification towards consideration of escalation of 3.5% every year, over the water charges of 2018-19. Accordingly, it has submitted that the water charges may be allowed after prudence check, based on water consumption. The Respondent has also submitted that the water charges claimed by the Petitioner, is in contravention to the maximum water consumption limits of 3.5 m^3/MWh, as per MOEF& CC notification dated 7.12.2015. It has recommended the admissibility of Rs.1331.71 lakh for 2019-20 and for period 2021-24 and Rs.1463.91 lakh for 2020-21. The Petitioner in its rejoinder has submitted that the water charges are based on actual water consumption and contracted water quantity and are calculated based on water agreement signed with the State Water Resources Department (WRD). The Petitioner has also submitted that it has to pay minimum 90% of the agreed quantum of water charges as per water agreement. The Petitioner has stated that the water charges claimed are on estimated basis, based on the actual water charges paid for 2018-19. it has further submitted that water is the raw material for any thermal generating plant like fuel and the generator has to ensure water and coal corresponding to the MCR capacity so that it can offer its availability for supply of energy to the respective

beneficiaries as per their entitlements. The Petitioner has pointed out that water, is arranged considering the peak requirements of the units in different season and the maximum demand envisaged. It has stated that the calculations indicated by Respondent MPPMCL is based on the actual generation of the generating station, that varies month on month, based on the seasonal variations and demand of various beneficiaries. However, the Petitioner has submitted that it has to arrange water corresponding to the maximum availability of the station i.e. at the MCR/Installed capacity.

39. We have examined the matter. The water charges for the period 2019-24 has been claimed by Petitioner on the basis of water charges claimed for 2018-19 with annual escalation of 3.5%. It is also observed that the rate of water charges considered by the Petitioner for the 2019-24 tariff period, is same as that for the 2014-19 tariff period. However, subsequently the Petitioner has furnished the actual water charges of the generating station for the years 2019-20 and 2020-21. As noted in paragraph 65 of the order dated 7.5.2022 in Petition No. 241/GT/2020, the computations made by the Respondent, MPPMCL do not take in to consideration the provisions of agreement dated 27.12.2008 between the Petitioner and WRD, Govt. of M.P. The said agreement provides for payment of water charges for at least 90% of the total quantum of water charges allowed to be drawn or the actual water drawn, whichever is higher. However, for the present, we are not inclined to allow the annual escalation of 3.5%, as claimed by the Petitioner. Accordingly, we allow the actual water charges of Rs.1555.08 lakh and Rs.1550.83 lakh for the years 2019-20 and 2020-21. For the remaining period i.e. 2021-24, we allow water charges of Rs.1550.83 lakh. Accordingly, the water charges claimed and allowed 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	1555.08	1550.83	1550.83	1550.83	1550.83

Security Expenses

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

> *"35(1)(6) The Water, Security Expenses and Capital Spares for thermal generating stations shall be allowed separately and after prudence check:*
>
> *xxxx:*
>
> *Provided further that the generating station shall submit the assessment of the security requirement and estimated expenses;*
>
> *xxxxx."*

41. The security expenses claimed by the Petitioner for the 2019-24 tariff period 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

42. The Petitioner has submitted that above 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. However, subsequently the Petitioner vide its affidavit dated 29.6.2021 has submitted that actual security expenses of the generating station for the year 2019-20 and 2020-21 is Rs.931.68 lakh and Rs.997.18 lakh, respectively.

43. We have examined the matter. The Petitioner has furnished the actual security expenses of the generating station for the year 2019-20 and 2020-21 and projected security expenses for the year 2021-22, 2022-23 and 2023-24. However, 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 actual security expenses for the period 2019-21 and projected security expenses for the period 2021-24, has been considered for the purpose of tariff. Accordingly, the security expenses claimed and allowed, subject to truing up, for the generating station for the 2019-24 tariff period is under:

(Rs. in lakh)

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Security expenses claimed	840.34	924.37	1016.81	1118.49	1230.34
Security expenses allowed	931.68	997.18	1016.81	1118.49	1230.34

Capital Spares

44. 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.

45. Accordingly, the total O&M expenses including water charges and security expenses, as claimed by the Petitioner and allowed to the generating station for the 2019-24 tariff period is 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
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)	**1555.08**	**1550.83**	**1550.83**	**1550.83**	**1550.83**
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)	**931.68**	**997.18**	**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)	**24996.76**	**25848.01**	**26687.64**	**27639.32**	**28621.17**

Additional expenditure on Emission Control System

46. The Petitioner has submitted that it is in the process of installing the Emission Control Systems (ECS) in compliance to the revised emission standards as notified by the MOEFCC vide notification dated 7.12.2015, as amended. It is however noticed that the Petitioner had filed Petition No. 519/MP/2020, for approval of additional expenditure on installation of various Emission Control Systems at this generating station, in compliance of MOEF&CC notification dated 7.12.2015 and the Commission by a common order dated 28.4.2021 had disposed of the said petition, with certain observations. Therefore, we are not deciding this issue in this petition. The claim of the Petitioner for additional expenditure on emission control system shall therefore be guided by order dated 28.4.2021 in Petition No. 519/MP/2020.

Additional expenditure towards Fly ash transportation

47. The Petitioner vide affidavit dated 12.5.2021 has claimed recovery of additional expenditure of Rs.13.51 lakh in 2020-21 from the beneficiaries on account of ash transportation charges after adjusting the revenue earned from sale of ash. We, however, note that the Petitioner has filed Petition No. 205/MP/2021 seeking reimbursement of fly ash transportation charges in respect of its generating stations. The Petitioner has raised similar issues with regard to fly ash transportation in that petition arguing higher liability

of the Respondents therein on account of interest burden and cash flow issues that may be faced by the Petitioner and the Respondents have raised the issue of 'maintainability' of the said petition. However, the Commission vide its order dated 28.5.2022 has 'admitted' the petition and directed the parties to complete their pleadings in the matter, on merits. The reimbursement of charges towards fly ash transportation shall, therefore, be governed by the final decision of the Commission in Petition No. 205/MP/2021.

Operational Norms

48. The Petitioner has considered following norms of operation, for the 2019-24 tariff period:

Normative Annual Plant Availability Factor (NAPAF) (%)	85
Heat Rate (kCal/kwh)	2390.00
Auxiliary Power Consumption (%)	7.05
Specific Oil Consumption (ml/kwh)	0.50

Normative Annual Plant Availability Factor

49. 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."

50. In terms of Regulation 49(A)(a) of the 2019 Tariff Regulations, the Petitioner has considered Normative Annual Plant Availability Factor of 85% during the 2019-24 tariff period, the same is allowed.

Gross Station Heat Rate (kCal/kWh)

51. 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*

52. In terms of Regulation 49(C)(a)(i) of the 2019 Tariff Regulations, the Petitioner has considered Gross Station Heat Rate (GSHR) of 2390 kCal/kWh during the 2019-24 tariff period and hence, the same is allowed.

Secondary Fuel Oil Consumption

53. 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"

54. In terms of Regulation 49(D)(a) of the 2019 Tariff Regulations, the Petitioner has considered secondary fuel oil consumption of 0.50 ml/kWh during the 2019-24 tariff period and hence, the same is allowed.

Auxiliary Power Consumption

55. 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 Sysem	***(% 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."

56. In terms of Regulation 49(E)(a) of the 2019 Tariff Regulations, the Petitioner has considered auxiliary energy consumption of 7.05% during the 2019-24 tariff period and hence, the same is allowed.

Interest on Working Capital

57. 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.*
>
> *xxxxx*
>
> *(3) Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-24 in which the generating station or a unit thereof or the transmission system including communication system or element thereof as the case may be is declared under commercial operation whichever is later.*
>
> *Provided that in case of truing-up the rate of interest on working capital shall be considered at bank rate as on 1st April of each of the financial year during the tariff period 2019-24.*
>
> *(4) Interest on working capital shall be payable on normative basis notwithstanding that the generating company or the transmission licensee has not taken loan for working capital from any outside agency."*

Fuel Cost and Energy Charges in Working Capital

58. 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.

59. 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."*

60. 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.

61. Accordingly, the Petitioner has claimed ECR of Rs.1.615 per kWh and the following fuel cost component in working capital:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of coal for 40 days	12044.82	12044.82	12044.82	12044.82	12044.82
Cost of secondary fuel oil for 2 months	313.79	312.93	312.93	312.93	313.79

62. On perusal of the Form-15 furnished by the Petitioner vide affidavit dated 29.6.2021, it is observed that the Petitioner has included opening stock of coal and its corresponding value while computing weighted average price of coal for the month 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. Thus, the opening stock of coal and its corresponding values have been excluded while computing the weighted average price and GCV of coal. Similarly, while calculating normative transit and handling losses in respect of coal the Petitioner has considered the same in excess of prescribed limit of 0.2%. The normative transit and handling losses of 0.2% has been considered for the purpose 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)	2231.13	2260.56
Weighted average GCV of coal (kCal/kg) *	3605.11	3605.06

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

** Weighted average GCV of coal as received net of 85 kCal/kg on account of variation during storage at generating station.*

63. 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	12044.82		12203.86	
Cost of secondary fuel oil for 2 months	313.79	312.93	313.79	312.93
Energy charges for 45 days	13781.91		13959.68	
ECR (Rs./kWh)	1.615		1.636	

64. 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.

<u>Working Capital for Maintenance Spares</u>

65. The Petitioner has claimed the maintenance spares in the 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

66. 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 2019-24 tariff period is as under:

(Rs. in lakh)

2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
4999.35	5169.60	5337.53	5527.86	5724.23

Working Capital for Receivables

67. 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	13959.68	13959.68	13959.68	13959.68	13959.68
Fixed Charges - for 45 days	6154.68	6258.93	6372.48	6563.87	6706.21
Total	**20114.36**	**20218.61**	**20332.15**	**20523.55**	**20665.89**

Working Capital for O&M Expenses

68. The Petitioner has claimed the O&M expenses for 1 month in the 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

69. 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 the O&M expenses (including water charges and security expenses) allowed for the 2019-24 tariff period is as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
2083.06	2154.00	2223.97	2303.28	2385.10

70. 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
Cost of Coal towards Stock - 10 days	3050.97	3050.97	3050.97	3050.97	3050.97
Cost of Coal towards Generation - 30 days	9152.90	9152.90	9152.90	9152.90	9152.90
Cost of Secondary fuel oil - 2 months	313.79	312.93	312.93	312.93	313.79
Maintenance Spares @ 20% of O&M expenses	4999.35	5169.60	5337.53	5527.86	5724.23
Receivables - 45 days	20114.36	20218.61	20332.15	20523.55	20665.89
O&M expenses - 1 month	2083.06	2154.00	2223.97	2303.28	2385.10
Total Working Capital	**39714.42**	**40059.00**	**40410.44**	**40871.48**	**41292.87**
Rate of Interest	12.0500%	11.2500%	10.5000%	10.5000%	10.5000%
Interest on Working Capital	**4785.59**	**4506.64**	**4243.10**	**4291.51**	**4335.75**

Annual Fixed Charges

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

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	5940.41	6042.55	6323.45	6790.12	7031.70
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	14335.31	14369.68	14433.67	14519.33	14555.25
Interest on Working Capital	4785.59	4506.64	4243.10	4291.51	4335.75
O&M Expenses	24996.76	25848.01	26687.64	27639.32	28621.17
Total	**50058.07**	**50766.88**	**51687.86**	**53240.28**	**54543.87**

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.*

72. 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

73. 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.

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. 485/GT/2020 is disposed of in terms of the above.

Sd/-	***Sd/-***	***Sd/-***
(Pravas Kumar Singh)	**(Arun Goyal)**	**(P.K. Pujari)**
Member	**Member**	**Chairperson**