CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 443/GT/2020

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

Date of Order: 15th September, 2023

In the matter of:

Petition for approval of tariff of Rajiv Gandhi Combined Cycle Power Project (RGCCPP), Kayamkulam (359.58 MW), for the period 2019-24.

AND

In the matter of:

NTPC Ltd.,
NTPC Bhawan,
Core-7, Scope Complex,
7, Institutional Area, Lodhi Road,
New Delhi – 110 003 **…. Petitioner**

Vs

Kerala State Electricity Board Limited,
Vaidyuthi Bhavanam, Pattom,
Thiruvananthapuram – 695 004 **……Respondent**

Parties Present:

Ms. Swapna Seshadri, Advocate, NTPC
Shri Anand K. Ganesan, Advocate, NTPC
Ms. Ritu Apurva, Advocate, NTPC
Shri Deepak Thakur, Advocate, NTPC

ORDER

This petition has been filed by the Petitioner, NTPC Limited for approval of tariff of Rajiv Gandhi Combined Cycle Power Project, Kayamkulam (359.58 MW) (in short 'the generating station') for the period 2019-24, in accordance with Regulation 9(2) 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 359.58 MW comprises of two Gas Turbine (GT) Units of 116.60 MW each and one Steam Turbine (ST) Unit of 126.38 MW. The dates of commercial operation of the different units of the generating station are as under:

	COD
Unit-I (GT)	1.1.1999
Unit-II (GT)	1.5.1999
Unit-III (ST) / Generating Station	1.3.2000

2. The Commission vide its order dated 15.6.2023 in Petition No. 234/GT/2020 had trued up the tariff of the generating station for the period 2014-19. Subsequently, the Commission vide corrigendum order dated 1.9.2023, had revised the tariff approved vide order dated 15.6.2023 in Petition No. 234/GT/2020, after correction of certain clerical/arithmetical errors. The capital cost and annual fixed charges approved by the Commission vide order dated 15.6.2023 read with corrigendum order dated 1.9.2023 is as under:

Capital Cost allowed

(Rs. in lakh)

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Opening capital cost	125041.54	125605.85	125655.71	125625.65	125622.99
Add: Addition during the year	564.31	49.86	(-) 30.06	(-) 2.65	1.71
Closing capital cost	**125605.85**	**125655.71**	**125625.65**	**125622.99**	**125624.70**
Average capital cost	125323.69	125630.78	125640.68	125624.32	125623.85

Annual Fixed Charges allowed

(Rs. in lakh)

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Depreciation	1933.55	1946.28	1944.47	1944.50	1944.38
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	7290.90	7344.37	7344.96	7343.99	7363.71
Interest on Working Capital	13995.93	14086.74	14041.96	14067.86	14100.38
O&M Expenses	5412.78	6311.06	5999.11	6340.34	6762.51
Annual Fixed Charges	**28633.16**	**29688.46**	**29330.49**	**29696.69**	**30170.98**

Present Petition

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

Capital Cost claimed

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Opening capital cost	125793.31	127620.31	128710.31	130820.31	130980.31
Add: Addition during the year	1827.00	1090.00	2110.00	160.00	1620.00
Less: De-capitalization during the year	-	-	-	-	-
Less: Reversal during the year	-	-	-	-	-
Add: Discharges during the year	-	-	-	-	-
Closing capital cost	**127620.31**	**128710.31**	**130820.31**	**130980.31**	**132600.31**
Average capital cost	126706.81	128165.31	129765.31	130900.31	131790.31

Note: Entire equity corresponding to capital cost claimed by the Petitioner is eligible for return on equity at normal ROE rate.

Annual Fixed Charges claimed

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	2106.91	2414.32	2854.69	3304.69	3935.39
Interest on Loan	-	-	-	-	-
Return on Equity	7060.98	7143.16	7233.32	7297.27	7347.42
Interest on Working Capital	6360.06	6370.37	6399.08	6428.61	6460.91
O&M Expenses	7602.80	7658.98	7993.13	8344.51	8717.69
Total	**23130.75**	**23586.84**	**24480.22**	**25375.07**	**26461.42**

4. The Respondent, KSEBL has filed its reply vide affidavit dated 22.7.2021 and the Petitioner vide its affidavit dated 17.8.2022 has filed its rejoinder to the said reply. The Petitioner vide affidavits dated 30.6.2021 and 24.8.2022 has submitted certain additional information, after serving copy on the Respondent. Thereafter, the Commission after hearing the parties, on 23.8.2022, reserved its order in the matter. Taking into consideration the submissions of the parties and the documents available on record, we proceed to examine the claims of the Petitioner, in this petition, on prudence check, as stated in the subsequent paragraphs.

Capital Cost

5. Clause (1) of Regulation 19 of the 2019 Tariff Regulations provides that the capital cost as determined by the Commission after prudence check, in accordance

with this regulation, shall form the basis of determination of tariff for existing and new projects. Clause 3 of Regulation 19 of the 2019 Tariff Regulations provides as under:

> *"(3) The Capital cost of an existing project shall include the following:*
> *(a) Capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;*
> *(b) Additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these regulations;*
> *(c) Capital expenditure on account of renovation and modernisation as admitted by this Commission in accordance with these regulations;*
> *(d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility;*
> *(e) Capital expenditure incurred towards railway infrastructure and its augmentation for transportation of coal upto the receiving end of generating station but does not include the transportation cost and any other appurtenant cost paid to the railway; and*
> *(f) Capital cost incurred or projected to be incurred by a thermal generating station, on account of implementation of the norms under Perform, Achieve and Trade (PAT) scheme of Government of India shall be considered by the Commission subject to sharing of benefits accrued under the PAT scheme with the beneficiaries."*

6. The annual fixed charges claimed in the Petition is based on opening capital cost of Rs.125793.31 lakh, as against the capital cost of Rs.125624.70 lakh, on cash basis (after removal of un-discharged liabilities amounting to Rs.72.35 lakh comprising of liabilities of Rs.0.30 lakh deducted as on 1.4.2009 and balance liability of Rs.72.05 lakh pertaining to assets allowed after 1.4.2009) allowed as on 31.3.2019, vide Commission's order dated 15.6.2023 read with Corrigendum order dated 1.9.2023 in Petition No. 234/GT/2020. Accordingly, in terms of Regulation 19(3) of the 2019 Tariff Regulations the capital cost of Rs.125624.70 lakh, on cash basis, 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 Capitalisation within the original scope and after the cut-off date:*
> *(1) The additional capital expenditure incurred or projected to be incurred in respect of an existing project or a new project on the following counts within the original scope of work and after the cut-off date may be admitted by the Commission, subject to prudence check:*
> *(a) Liabilities to meet award of arbitration or for compliance of the directions or order of any statutory authority, or order or decree of any court of law;*

(b) Change in law or compliance of any existing law;
(c) Deferred works relating to ash pond or ash handling system in the original scope of work;
(d) Liability for works executed prior to the cut-off date;
(e) Force Majeure events;
(f) Liability for works admitted by the Commission after the cut-off date to the extent of discharge of such liabilities by actual payments; and
Raising of ash dyke as a part of ash disposal system.

(2) In case of replacement of assets deployed under the original scope of the existing project after cut-off date, the additional capitalization may be admitted by the Commission, after making necessary adjustments in the gross fixed assets and the cumulative depreciation, subject to prudence check on the following grounds:
(a) The useful life of the assets is not commensurate with the useful life of the project and such assets have been fully depreciated in accordance with the provisions of these regulations;
(b) The replacement of the asset or equipment is necessary on account of change in law or Force Majeure conditions;
(c) The replacement of such asset or equipment is necessary on account of obsolescence of technology; and
(d) The replacement of such asset or equipment has otherwise been allowed by the Commission.

26. Additional Capitalisation beyond the original scope
(1) The capital expenditure, in respect of existing generating station or the transmission system including communication system, incurred or projected to be incurred on the following counts beyond the original scope, may be admitted by the Commission, subject to prudence check:
(a) Liabilities to meet award of arbitration or for compliance of order or directions of any statutory authority, or order or decree of any court of law;
(b) Change in law or compliance of any existing law;
(c) Force Majeure events;
(d) Need for higher security and safety of the plant as advised or directed by appropriate Indian Government Instrumentality or statutory authorities responsible for national or internal security;
(e) Deferred works relating to ash pond or ash handling system in additional to the original scope of work, on case to case basis:
Provided also that if any expenditure has been claimed under Renovation and Modernisation (R&M) or repairs and maintenance under O&M expenses, the same shall not be claimed under this Regulation;
(f) Usage of water from sewage treatment plant in thermal generating station.
(2) In case of de-capitalisation of assets of a generating company or the transmission licensee, as the case may be, the original cost of such asset as on the date of decapitalisation shall be deducted from the value of gross fixed asset and corresponding loan as well as equity shall be deducted from outstanding loan and the equity respectively in the year such de-capitalisation takes place with corresponding adjustments in cumulative depreciation and cumulative repayment of loan, duly taking into consideration the year in which it was capitalised.”

8. The year-wise projected additional capital expenditure claimed by the Petitioner for the generating station for the period 2019-24, is as under:

(Rs. in lakh)

	Regulation	2019-20	2020-21	2021-22	2022-23	2023-24
Fuel Handling system safety upgradations	26(1)(b) & 26(1) (d)	1800.00	1000.00	-	-	-
Bus bar protection for GIS switchyard	25(2)(c)	-	60.00	-	-	-
Replacement of GRP Relay with numerical relay (3 units)	25(2)(c)	-	-	-	90.00	90.00
Replacement of 11/6.6 kV with numerical relay	25(2)(c)	-	-	30.00	40.00	-
Replacement of 220 kV breaker (operating mechanism) in GIS switchyard	25(2)(c)	27.00	30.00	30.00	30.00	30.00
Upgradation of Mark V to Mark VIe	25(2)(c)	-	-	1500.00	-	-
ClO2 system	26(1)(b) & 26(1) (d)	-	-	550.00	-	-
Gas Conversion	26(1)(b)	-	-	-	-	1500.00
Total Additional Capital Expenditure Claimed		**1827.00**	**1090.00**	**2110.00**	**160.00**	**1620.00**

9. We now examine the projected additional capital expenditure claimed by the Petitioner for the period 2019-24, as under:

Fuel Handling system: Safety upgradation

10. The Petitioner has claimed projected additional capital expenditure of Rs.1800.00 lakh and Rs.1000.00 lakh during the years 2019-20 and 2020-21, respectively towards Safety upgradation of fuel handling system, under Regulation 26(1)(b) and Regulation 26(1)(d) of the 2019 Tariff Regulations. In justification for the same, the Petitioner has submitted that it is mandatory for Fuel handling facilities at unloading station and plant area to comply with OSID-117 (Fire protection facilities for petroleum depots, Terminals and pipeline installations). The Petitioner has further submitted that it was directed by Joint Director Factories and Boiler vide a priority inspection report, to carry out certain works for safety upgradation of fuel handling system, the same were carried out, as recommended at Fuel Handling system.

11. The Respondent has submitted that the capital expenditure claimed by the Petitioner may be disallowed as the plant is not scheduled due to its high variable cost

and the plant is nearing its useful life which is in 2025. The Respondent has also submitted that the stock at the plant has been fully depleted in March 2021, as part of reducing working capital and therefore there is no requirement for the proposed capital expenditure. In response, the Petitioner has reiterated its contentions made in the Petition.

12. The matter has been examined. The generating station being Naptha based, had declared COD in 2000 and a well-equipped firefighting system which is of prime importance has always been existing in any generating station. OSID-117, recommends the minimum requirement of fire protection facilities at Petroleum Depots, Terminals, Pipeline Installations with or without Storages, Central Tank Farms (CTF), Lube Oil Installations, Grease Manufacturing & Filling Facilities. The Petitioner has claimed the said expenditure as per the priority inspection carried out by office of the Factories & Boilers during 2014. Accordingly, a compliance report was to be furnished by the Petitioner within 30 days of receipt of the report to the office of the Joint Director of Factories & Boilers, but as per the documents submitted by the Petitioner along with petition, no such compliance report has been attached. In view of the above, the claim of the Petitioner on this count is **not allowed**. However, the Petitioner is granted liberty to claim the said expenditure with all relevant details along with de-capitalization value if any, at the time of truing up, which will be considered in accordance with law.

Bus bar protection for GIS switchyard

13. The Petitioner has claimed projected additional capital expenditure of Rs.60.00 lakh in 2020-21, towards Bus bar protection for GIS switchyard, under Regulation 25(2)(c) of the 2019 Tariff Regulations. In justification for the same, the Petitioner has submitted that MBCZ low impedance Bus bar protection relays are in service, however

no spares for the same are available, due to obsolescence. The Petitioner has further submitted that the present relays of bus bar protection were obsolete due to which the upgradation of Bus bar protection with latest numerical relay has been carried out, for reliable and safe operation of the protection system.

14. The Respondent has submitted that the proposed capital expenditure at the fag end of the project may be disallowed and this expenditure may be met through the O&M expenses allowed. In response, the Petitioner has mainly reiterated its contention and submitted that for continuous scheduling of power it has taken this step which has been certified by OEM.

15. The matter has been considered. Since the spares for MBCZ low impedance for Bus bar protection relays are not available due to obsolescence, the Petitioner has replaced the same for reliable and safe operation of protection system. Further, as per the submission of the Petitioner, the OEM has also certified that these items are obsolete. In view of the fact that the claim is on account of obsolescence of technology, the additional capital expenditure claimed by the Petitioner **is allowed**. However, the assumed deletion has been carried out for the said replacement.

Replacement of GRP Relay with numerical relay (3 units)

16. The Petitioner has claimed projected additional capital expenditure of Rs.90.00 lakh each towards Replacement of GRP relay with numerical relay during the years 2022-23 and 2023-24, under Regulation 25(2)(c) of the 2019 Tariff Regulations. In justification for the same, the Petitioner has submitted that replacement of existing electromechanical relays with numerical relays are envisaged since existing relays are old & spares are not available. The Petitioner has further submitted that replacement of electromechanical relays to numerical relays has also been taken up during technical audits.

17. The Respondent has submitted that the proposed capital expenditure at the fag end of the project may be disallowed and the Petitioner may be directed to meet the expenditure from the O&M expenses allowed. In response, the Petitioner has submitted that the reason for incurring the said claim is also similarly placed like Bus Bar protection for GIS S/Y/ line, the only difference is that the above need for replacement was verified during technical audit.

18. The matter has been examined. Since the replacement of GRP relay with numerical relay have been taken up by the technical audit and these facts were also accepted by the Respondent, the claim of the Petitioner is **allowed**. However, assumed deletion has been carried out for the said replacement.

Replacement of 11/6.6 kV with numerical relay

19. The Petitioner has claimed projected additional capital expenditure of Rs.30.00 lakh and Rs.40.00 lakh towards replacement of 11/6.6 kV with numerical relay during the years 2021-22 and 2022-23, respectively under Regulation 25(2)(c) of the 2019 Tariff Regulations. In justification for the same, the Petitioner has submitted that replacement of existing electromechanical relays with numerical relays are envisaged since existing relays are old & spares are not available. The Petitioner has further submitted that replacement of electromechanical relays with numerical relays has also been taken up during technical audits which includes replacement of 11kV and another LT feeder.

20. The Respondent has submitted that the proposed capital expenditure at the fag end of the project may be disallowed and the Petitioner may be directed to meet the expenditure from the O&M expenses allowed. In response, the Petitioner has

submitted that this claim is similar to the bus protection of switchyard system and the same is verified by the technical audit.

21. The matter has been considered. Since the replacement of 11/6.6 kV with numerical relay has been verified by technical audit, the claim of the Petitioner is **allowed**. However, assumed deletion has been carried out for the said replacement.

Replacement of 220 kV breaker (operating mechanism) in GIS switchyard

22. The Petitioner has claimed projected additional capital expenditure of Rs 147.00 lakh in 2019-24, towards the Replacement of 220 kV breaker in GIS switchyard under Regulation 25(2)(c) of the 2019 Tariff Regulations. In justification for the same, the Petitioner has submitted that the moving parts especially the hydraulic mechanism has been affected by wear and tear and there is no Indian manufacturer or vendor for spares supply. Accordingly, the Petitioner has stated that replacement of hydraulic pump and power cylinder is envisaged for safe operation of the protection system.

23. The Respondent has submitted that the proposed capital expenditure at the fag end of the project may be disallowed and the Petitioner may be directed to meet the expenditure from the O&M expenses allowed.

24. The matter has been considered. It is noticed that GIS has been in service for more than 20 years and the hydraulic parts have been affected due to wear and tear and there is no Indian manufacturer or vendor for the supply of spares which have become obsolete. In view of this, the claim of the Petitioner **is allowed**. However, assumed deletion has been carried out for the said replacement.

Upgradation of Mark V to Mark VIe

25. The Petitioner has claimed projected additional capital expenditure of Rs.1500.00 lakh in 2021-22, towards Upgradation of Mark V to Mark VIe, under

Regulation 25(2)(c) of the 2019 Tariff Regulations. In justification for the same, the Petitioner has submitted that BHEL-GE Gas Turbine Services Pvt. Ltd. vide their letter dated 4.1.2010, on Life Cycle Notification for Mark V Controls, has said that due to phasing out of the technology, GE has stopped manufacturing Mark V control system in April, 2004 and the supports for spare parts can be extended only up to 2014. It has also stated that the extension of further support would be difficult due to obsolescence of technology. The Petitioner has added that BHEL has also suggested for the migration to new control system i.e. Mark VIe without compromising on reliability and availability.

26. The Respondent has submitted that proposed capital expenditure at the fag end of the project may be disallowed and the Petitioner may be directed to meet the expenditure from the O&M expenses allowed.

27. The matter has been examined. It is observed that the claim of the Petitioner is on account of obsolescence of technology. The Petitioner has furnished a letter dated 4.1.2010, issued by BHEL-GE Gas Turbine Services Pvt. Ltd. on Life Cycle Notification certifying the claim of the Petitioner. In view of this, the claim of the Petitioner **is allowed**. However, the assumed deletion has been carried out for the said replacement.

ClO2 system

28. The Petitioner has claimed projected additional capital expenditure of Rs.550.00 lakh in 2021-22 towards the work of ClO_2 system, under Regulation 26(1)(b) & 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 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 dosing is done from chlorine stored in cylinders/ tonners. Chlorine gas is very hazardous and may prove fatal in case of leakage; handling and storage of same involves risk to the life of public at large. 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. As ClO_2 is generated at site, avoids handling and storage risk. Further, at Kudgi NTPC project Department of Factories, Boiler, Industrial Safety and Health, Govt of Karnataka has directed 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. For safety of public NTPC is replacing the chlorination system with ClO_2 system

29. The Respondent has submitted that the proposed capital expenditure at the fag end of the project may be disallowed. The Respondent has further submitted that the proposed capital expenditure does not qualify for the claim under these heads, therefore, the Petitioner may be directed to meet the expenditure from the O&M expenses allowed. In response, the Petitioner has mainly reiterated its contention and submitted that the concern in this regard has been raised by Government of Karnataka w.r.t. Kudgi Thermal Power station.

30. The matter has been considered. Though the Petitioner has contended that the Chlorine dozing system is to be replaced by the ClO_2 system, in the interest of public safety, it has not demonstrated that the projected additional capital expenditure is on account of 'change in law' or for compliance with the existing law. Similarly, the Petitioner has also not submitted any documentary evidence indicating that the

projected additional capital expenditure is based on the advice and or directions of the appropriate Governmental agency or statutory authorities. It is observed that the letter dated 23.9.2013 issued by the Directorate of Factories, Industrial Safety & Health, Government of Karnataka pertains to site clearance of Kudgi Super Thermal Power station of the Petitioner. However, the said letter in no manner, can be termed as a 'change in law' event or for compliance with any existing law in respect of the instant generating station warranting the additional capital expenditure. We find no specific direction or advice from any Governmental or statutory authorities for implementation of this item for safety and security of the generating station. In view of this. The projected additional capital expenditure claimed by the Petitioner is **not allowed**. The Petitioner at the time of truing up shall furnish the value of decapitalization for the said replacement.

Gas Conversion

31. The Petitioner has claimed projected additional capital expenditure of Rs.1500.00 lakh in 2023-24, towards the work of Gas conversion, under Regulation 26(1)(b) of the 2019 Tariff Regulations. In justification for the same, the Petitioner has submitted that this work was disallowed by the Commission vide order dated 27.10.2016 in Petition No. 269/GT/2014. The Petitioner has further submitted that the Appellate Tribunal for Electricity (APTEL) vide its judgment dated 5.8.2016 in Appeal No. 40 of 2017, has stated that this expenditure should be equally shared by both the parties in the ratio of 50:50. The Petitioner has stated that at present, the erection work of gas conversion has already been completed, but could not be capitalised due to non-availability of gas for commissioning.

32. The matter has been examined. The Commission vide order dated 27.10.2016 in Petition No. 269/GT/2014 had rejected the claim of the Petitioner for Rs.3000.00

lakh towards multifuel firing facility during 2018-19. On an appeal filed before APTEL, in Appeal No. 40 of 2017, the APTEL vide its judgment dated 5.8.2019 held that the burden of such expenditure should be equally shared by both the parties in the ratio of 50:50.

33. Clause (a) of Regulation 19(5) of the 2019 Tariff Regulations provides as under:

> *"(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;"*

34. In terms of the above provisions, the claim of the Petitioner for additional capitalization, is subject to the asset being put to use. The Petitioner has submitted that the erection work of Gas conversion has already been completed, but could not be capitalized due to non-availability of gas for commissioning. Since the asset has not been put to service, the same cannot be allowed to form part of the capital cost, in terms of the above provisions of the 2019 Tariff Regulations. However, the Petitioner is at liberty to capitalize the said asset, as and when the same is put to use. Accordingly, the Petitioner, shall, at the time of truing up of tariff, furnish the status regarding proposal of laying of pipeline and detail whether they have made any alternate arrangement for supply of gas.

Assumed Deletion

35. 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 capitalization of the said asset, is followed by the de-capitalization of the gross value of the old asset. However, in certain cases, where the de-capitalization is proposed to be affected during the future year of capitalization of the new asset, the de-capitalization 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 de-capitalization which is not a book entry in the year of capitalization is termed as 'Assumed Deletion'. Therefore, for arriving at the gross value of the old asset under consideration, the escalation rate of 5% per annum from the COD has been considered till the year during which additional capital expenditure is claimed against the replacement of the same. The amount claimed for the additional capital expenditure against the asset is multiplied by the derived ratio from above values i.e., value in year of COD divided by value in the year of replacement being claimed. Accordingly, based on above methodology, the assumed deletions considered for these assets/works and consequently de-capitalization allowed is as under:

(Rs. in lakh)

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Assumed deletions	10.64	33.78	557.68	54.47	38.91

36. Based on the above, the total projected additional capital expenditure allowed for the generating station for the period 2019-24, taking into account the assumed deletion is summarized as under:

(Rs. in lakh)

		2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Fuel Handling system safety upgradations	Claimed	1800.00	1000.00	0.00	0.00	0.00
	Allowed	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Bus bar protection for GIS switchyard	Claimed	0.00	60.00	0.00	0.00	0.00
	Allowed	**0.00**	**60.00**	**0.00**	**0.00**	**0.00**
Replacement of GRP Relay with numerical relay (3 units)	Claimed	0.00	0.00	0.00	90.00	90.00
	Allowed	**0.00**	**0.00**	**0.00**	**90.00**	**90.00**
Replacement of 11/6.6 kV with numerical relay	Claimed	0.00	0.00	30.00	40.00	0.00
	Allowed	**0.00**	**0.00**	**30.00**	**40.00**	**0.00**
Replacement of 220 kV breaker (operating mechanism) in GIS switchyard	Claimed	27.00	30.00	30.00	30.00	30.00
	Allowed	**27.00**	**30.00**	**30.00**	**30.00**	**30.00**
Upgradation of Mark V to Mark VIe	Claimed	0.00	0.00	1500.00	0.00	0.00
	Allowed	**0.00**	**0.00**	**1500.00**	**0.00**	**0.00**
ClO2 system	Claimed	0.00	0.00	550.00	0.00	0.00
	Allowed	**0.00**	**0.00**	**0.00**	0.00	0.00
Gas Conversion	Claimed	0.00	0.00	0.00	0.00	1500.00
	Allowed	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Total additional capital expenditure allowed (before assumed deletion)	**27.00**	**90.00**	**1560.00**	**160.00**	**120.00**
Less: Assumed deletion	10.64	33.78	557.68	54.47	38.91
Net additional capital expenditure allowed	**16.36**	**56.22**	**1002.32**	**105.53**	**81.09**

Capital cost allowed for the period 2019-24

37. Accordingly, the capital cost approved for the generating station is summarized as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Opening capital cost	125624.70	125641.06	125697.28	126699.60	126805.13
Add: Additional capital expenditure	16.36	56.22	1002.32	105.53	81.09
Closing capital cost	125641.06	125697.28	126699.60	126805.13	126886.22
Average capital cost	125632.88	125669.17	126198.44	126752.36	126845.67

Debt Equity Ratio

38. Regulation 19 of the 2019 Tariff Regulations provides as under:

"19. Debt-Equity Ratio: (1) For a project declared under commercial operation on or after 1.4.2014, the debt-equity ratio would be considered as 70:30 as on COD. 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 shall submit the resolution of the Board of the company or approval from Cabinet Committee on Economic Affairs (CCEA) regarding infusion of fund 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 1.4.2014, debt-equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2014 shall be considered.

(4) In case of the generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2014, but where debt: equity ratio has not been determined by the Commission for determination of tariff for the period ending 31.3.2014, the Commission shall approve the debt: equity

ratio based on actual information provided by the generating company or the transmission licensee as the case may be.

(5) Any expenditure incurred or projected to be incurred on or after 1.4.2014 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.

39. The Petitioner has considered the gross normative loan of Rs.88354.91 lakh and equity of Rs.37269.79 lakh, as on 31.3.2019, as approved in order dated 15.6.2023 read with corrigendum order dated 1.9.2023 in Petition No. 234/GT/2020 and the same has been retained as on 1.4.2019. Further, the additional capital expenditure approved above has been allocated to debt and equity in the debt-equity ratio of 70:30. Accordingly, the details of debt-equity ratio considered for the purpose of computation of tariff is as under:

(Rs. in lakh)

	Capital cost as on 1.4.2019	**(%)**	**Additional capital expenditure**	**(%)**	**Total cost as on 31.3.2024**	**(%)**
Debt	88354.91	70.33%	883.06	70.00%	89237.97	70.33%
Equity	37269.79	29.67%	378.45	30.00%	37648.24	29.67%
Total	**125624.70**	**100.00%**	**1261.51**	**100.00%**	**126886.22**	**100.00%**

Return on Equity

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

"30. Return on Equity:

(1) Return on equity shall be computed in rupee terms on the equity base determined in accordance with Regulation 18 of these regulations.

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

Provided that return on equity in respect of additional capitalization after cut-off date beyond the original scope excluding additional capitalization due to Change in Law shall be computed at the weighted average rate of interest on actual loan portfolio of the generating station or the transmission system;

Provided further that:

(i) In case of a new project the rate of return on equity shall be reduced by 1.00% for such period as may be decided by the Commission if the generating station or transmission system is found to be declared under commercial operation without commissioning of any of the Restricted Governor Mode Operation (RGMO) or Free Governor Mode Operation (FGMO) data telemetry communication system up to load

dispatch centre or protection system based on the report submitted by the respective RLDC;

(ii) in case of existing generating station as and when any of the requirements under (i) above of this Regulation are found lacking based on the report submitted by the concerned RLDC rate of return on equity shall be reduced by 1.00% for the period for which the deficiency continues;

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

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

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

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

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

"31. Tax on Return on Equity:

(1) The base rate of return on equity as allowed by the Commission under Regulation 30 of these regulations shall be grossed up with the effective tax rate of the respective financial year. For this purpose the effective tax rate shall be considered on the basis of actual tax paid in respect of the financial year in line with the provisions of the relevant Finance Acts by the concerned generating company or the transmission licensee as the case may be. The actual tax paid on income from other businesses including deferred tax liability (i.e. income from business other than business of generation or transmission as the case may be) shall be excluded for the calculation of effective tax rate.

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

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

Where "t" is the effective tax rate in accordance with Clause (1) of this Regulation and shall be calculated at the beginning of every financial year based on the estimated profit and tax to be paid estimated in line with the provisions of the relevant Finance Act applicable for that financial year to the company on pro-rata basis by excluding the income of non-generation or non-transmission business as the case may be and the corresponding tax thereon. In case of generating company or transmission licensee paying Minimum Alternate Tax (MAT) "t" shall be considered as MAT rate including surcharge and cess.

Illustration-

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

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

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

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

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

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

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

(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."

42. The Petitioner has claimed ROE considering the base rate of 15.50% and effective tax rate of 17.472% % (i.e. MAT Rate of 15% + Surcharge of 12% + HEC of 4%) for the period 2019-24. Since the entire equity of the generating station is eligible for ROE at the normal rate of ROE, in terms of the above regulation, the rate of ROE as claimed by the Petitioner, has been considered for the purpose of tariff. Accordingly, ROE has been worked out and allowed as under:

(Rs.in lakh)

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Normative Equity – Opening	37269.79	37274.70	37291.56	37592.26	37623.92
Addition of Equity due to additional capital expenditure	4.91	16.87	300.70	31.66	24.33
Normative Equity – Closing	37274.70	37291.56	37592.26	37623.92	37648.24
Average Normative Equity	37272.24	37283.13	37441.91	37608.09	37636.08
Return on Equity (Base Rate)	15.500%	15.500%	15.500%	15.500%	15.500%
Effective Tax Rate	17.472%	17.472%	17.472%	17.472%	17.472%
Rate of Return on Equity (Pre-tax)	18.782%	18.782%	18.782%	18.782%	18.782%
Return on Equity (Pre-tax) - (annualized)	**7000.47**	**7002.52**	**7032.34**	**7063.55**	**7068.81**

Interest on loan

43. 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."

44. Interest on loan has been computed as under:

i) As stated above, the gross normative loan amounting to Rs.88354.91 lakh has been retained, as on 1.4.2019.

ii) Cumulative repayment of Rs.88354.91 lakh, as on 31.3.2019 as considered in order dated 15.6.2023 read with corrigendum order dated 1.9.2023 in Petition No. 234/GT/2020 has been retained, as on 1.4.2019;

iii) Accordingly, the net normative opening loan, corresponding to assets existing at the beginning of 1.4.2019 (hereinafter referred to as 'existing assets'), as on 1.4.2019 works out to '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 period 2019-24;

vi) The Petitioner has claimed tariff considering weighted average rate of interest (WAROI) of 6.571% for the period 2019-24, the same has been considered, subject to truing up.

45. Necessary calculation of interest on loan is as under:

(Rs. in lakh)

		2019-20	2020-21	2021-22	2022-23	2023-24
A	**For existing assets**					
a	Gross opening loan	88354.91	88347.46	88323.82	87933.44	87895.31
b	Cumulative repayment of loan upto previous year	88354.91	88347.46	88323.82	87933.44	87895.31
c	**Net Loan Opening (a-b)**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

d	Addition on account of additional capital expenditure	(-) 7.45	(-) 23.65	(-) 390.37	(-) 38.13	(-) 27.24
e	Repayment of loan during the year	0.00	0.00	0.00	0.00	0.00
f	Repayment adjustment on account of de-capitalisation	7.45	23.65	390.37	38.13	27.24
g	Net repayment of loan during the year (e-f)	**(-) 7.45**	**(-) 23.65**	**(-) 390.37**	**(-) 38.13**	**(-) 27.24**
h	**Net Loan Closing (c+d-g)**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
i	Average Loan [(c+h)/2]	0.00	0.00	0.00	0.00	0.00
j	WAROI	6.5710%	6.5710%	6.5710%	6.5710%	6.5710%
k	**Interest on Loan (i x j)**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
B	**For other assets (i.e. assets admitted on or after 1.4.2019 or new assets)**					
l	Gross opening loan	0.00	18.90	81.90	1173.90	1285.90
m	Cumulative repayment of loan upto previous year	0.00	0.71	4.51	51.88	144.65
n	**Net Loan Opening (l-m)**	**0.00**	**18.19**	**77.39**	**1122.02**	**1141.25**
o	Addition on account of additional capital expenditure	18.90	63.00	1092.00	112.00	84.00
p	Repayment of loan during the year	0.71	3.80	47.36	92.77	100.16
q	Repayment adjustment on account of de-capitalisation	0.00	0.00	0.00	0.00	0.00
r	Net repayment of loan during the year (p-q)	**0.71**	**3.80**	**47.36**	**92.77**	**100.16**
s	**Net Loan Closing (n+o-r)**	**18.19**	**77.39**	**1122.02**	**1141.25**	**1125.09**
t	Average Loan [(n+s)/2]	9.09	47.79	599.70	1,131.64	1,133.17
u	WAROI	6.5710%	6.5710%	6.5710%	6.5710%	6.5710%
v	**Interest on Loan (t x u)**	**0.60**	**3.14**	**39.41**	**74.36**	**74.46**
C	**For total admitted assets (A+B)**					
w	Gross opening loan (a+l)	88354.91	88366.36	88405.72	89107.34	89181.21
x	Cumulative repayment of loan upto previous year (b+m)	88354.91	88348.18	88328.33	87985.32	88039.96
y	**Net Loan Opening (c+n)**	**0.00**	**18.19**	**77.39**	**1122.02**	**1141.25**
z	Addition on account of additional capital expenditure (d+o)	11.45	39.35	701.63	73.87	56.76
aa	Repayment of loan during the year (e+p)	0.71	3.80	47.36	92.77	100.16
ab	Repayment adjustment on account of de-capitalisation (f+q)	7.45	23.65	390.37	38.13	27.24
ac	Net repayment of loan during the year (g+r)	(-) 6.74	(-) 19.85	(-) 343.01	54.64	72.92
ad	**Net Loan Closing (h+s)**	18.19	77.39	1122.02	1141.25	1125.09
ae	Average Loan (i+t)	9.09	47.79	599.70	1131.64	1133.17
af	WAROI	6.5710%	6.5710%	6.5710%	6.5710%	6.5710%
ag	**Interest on Loan (k x v)**	**0.60**	**3.14**	**39.41**	**74.36**	**74.46**

Depreciation

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

"33. Depreciation: (1) Depreciation shall be computed from the date of commercial operation of a generating station or unit thereof or a transmission system or element thereof including communication system. In case of the tariff of all the units of a generating station or all elements of a transmission system including communication

system for which a single tariff needs to be determined, the depreciation shall be computed from the effective date of commercial operation of the generating station or the transmission system taking into consideration the depreciation of individual units:

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

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

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

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

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

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

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

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

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

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

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

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

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

47. The cumulative depreciation amounting to Rs.98570.46 lakh (Rs.98570.46 lakh for existing assets and 'Nil' for assets admitted during the period 2019-14) and the

value of freehold land of Rs.4720.40 lakh (on cash basis) has been considered in the calculation of depreciable value for the purpose of tariff. Further, since the generating station is completing its useful life in the year 2024-25, the depreciation for the assets admitted in the period 2019-24 is allowed at the weighted average rate of depreciation (WAROD) of 5.28%. Accordingly, depreciation has been computed and allowed as under:

(Rs. in lakh)

		2019-20	2020-21	2021-22	2022-23	2023-24
A	**For existing assets**					
a	Opening capital cost	125624.70	125614.06	125580.28	125022.60	124968.13
b	Additional capital expenditure	(-)10.64	(-)33.78	(-)557.68	(-)54.47	(-)38.91
c	Closing capital cost (a+b)	**125614.06**	**125580.28**	**125022.60**	**124968.13**	**124929.22**
d	Average capital cost [(a+c)/2]	125619.38	125597.17	125301.44	124995.36	124948.67
e	Freehold land	4720.40	4720.40	4720.40	4720.40	4720.40
f	Depreciable Value [(d-e) x 0.9]	108809.08	108789.09	108522.94	108247.47	108205.44
g	Cumulative depreciation at the beginning of the year (Previous year's 'm')	98570.46	100505.45	102418.72	103823.43	105727.88
h	Balance depreciable value (f-g)	10238.63	8283.64	6104.21	4424.04	2477.56
i	Balance useful life at the beginning of the year	5.27	4.27	3.27	2.27	1.27
j	Depreciation Rate (k/d)	1.55%	1.55%	1.49%	1.56%	1.56%
k	Depreciation for the year (h/i)	1943.50	1940.81	1867.80	1950.52	1953.71
l	Cu. depreciation adjustment on account of de-capitalisation	8.51	27.54	463.09	46.07	33.51
m	Cu. Depreciation at end of the year (g+k-l)	100505.45	102418.72	103823.43	105727.88	107648.08
B	**For other assets (i.e. assets admitted on or after 1.4.2019 or new assets)**					
n	Opening capital cost	0.00	27.00	117.00	1677.00	1837.00
o	Additional capital expenditure	27.00	90.00	1560.00	160.00	120.00
p	Closing capital cost (n+o)	**27.00**	**117.00**	**1677.00**	**1837.00**	**1957.00**
q	Average capital cost [(n+p)/2]	13.50	72.00	897.00	1757.00	1897.00
r	Freehold land					
s	Depreciable Value [(q-r) x 0.9]	12.15	64.80	807.30	1581.30	1707.30
t	Cumulative depreciation at the beginning of the year (Previous year's 'z')	0.00	0.71	4.51	51.88	144.65
u	Balance depreciable value (s-t)	12.15	64.09	802.79	1529.42	1562.65
v	Balance useful life at the beginning of the year	5.27	4.27	3.27	2.27	1.27
w	Depreciation Rate	5.28%	5.28%	5.28%	5.28%	5.28%
x	Depreciation for the year (q x w)	0.71	3.80	47.36	92.77	100.16

y	Cu. depreciation adjustment on account of de-capitalisation	0.00	0.00	0.00	0.00	0.00
z	Cu. Depreciation at end of the year (t+x-y)	0.71	4.51	51.88	144.65	244.81
C	**For total admitted assets (A+B)**					
aa	Opening capital cost (a+n)	125624.70	125641.06	125697.28	126699.60	126805.13
ab	Additional capital expenditure (b+o)	16.36	56.22	1002.32	105.53	81.09
ac	Closing capital cost (c+p)	125641.06	125697.28	126699.60	126805.13	126886.22
ad	Average capital cost (d+q)	125632.88	125669.17	126198.44	126752.36	126845.67
ae	Freehold land (e+r)	4720.40	4720.40	4720.40	4720.40	4720.40
af	Depreciable Value (f+s)	108821.23	108853.89	109330.24	109828.77	109912.74
ag	Cumulative depreciation at the beginning of the year (g+t)	98570.46	100506.16	102423.24	103875.30	105872.53
ah	Balance depreciable value (h+u)	10250.78	8347.73	6907.00	5953.47	4040.22
ai	Balance useful life at the beginning of the year ('i' or 'v')	5.27	4.27	3.27	2.27	1.27
aj	Depreciation Rate (aj/ad)	1.5475%	1.5474%	1.5176%	1.6120%	1.6192%
ak	Depreciation for the year (k+x)	1944.22	1944.61	1915.16	2043.29	2053.87
al	Cu. depreciation adjustment on account of de-capitalisation (l+y)	8.51	27.54	463.09	46.07	33.51
am	Cu. Depreciation at end of the year (m+z)	100506.16	102423.24	103875.30	105872.53	107892.89

Operation & Maintenance Expenses

48. Regulation 35(1)(3) of the 2019 Tariff Regulations provides for the O&M expense norms for combined cycle gas turbine power generating stations equipped with Advance F Class Machines as follows:

(in Rs. lakh/MW)

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

49. The O&M expenses claimed by the Petitioner, is in accordance with the 2019 Tariff Regulations, and hence the same is allowed, as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
6321.42	6544.36	6774.49	7011.81	7259.92

Water Charges and Security Expenses

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

"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:

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

51. In terms of the above regulation, water charges are to be allowed based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check. The Petitioner has furnished the rate of water charges applicable for the year 2018-19 as under:

	Remarks
Type of Plant	Naphtha / Gas
Type of cooling water system	Closed Circuit cooling
Consumption of Water/Allocation	32 Cusec
Rate of Water charges	Rs. 1/KL
Total Water Charges	Rs. 0.93 Lakhs

52. Accordingly, the Petitioner has claimed water charges for the period 2019-24 based on the water charges claimed for the year 2018-19 as under:

(Rs. in lakh)

2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
1.00	1.00	1.00	1.00	1.00

53. The matter has been considered. As per the minutes of meeting held with the officials of the various departments of the State Govt. of Kerala on 6.11.1996 and 30.3.1999, as submitted by the Petitioner in Petition No. 269/GT/2014, the rate of water charges is Rs1.0/ KL and the maximum amount payable by the Petitioner is Rs.5.00 lakh per annum and there is no further agreement/notification for escalation of water charges. The Petitioner has claimed Rs.1.00 lakh for each year, for the period

2019-24, based on the water charges allowed by the Commission for 2018-19 in Petition No. 234/GT/2020. In view of this, water charges of Rs.1.00 lakh per annum, has been allowed for the period 2019-24. The water charges allowed as above is subject to truing-up at the end of the tariff period for which the Petitioner is directed to place on record all relevant detail of actual water consumption and rate of water charges along with all the requisite documents clearly bifurcating the quantum and water charges supplied to the generating station and water supplied to the township. 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
1.00	1.00	1.00	1.00	1.00

Security Expenses

54. The Petitioner has claimed 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
1280.38	1113.62	1217.64	1331.70	1456.77

55. The matter has been examined. The Petitioner has claimed the security expenses for the period 2019-24, on estimated basis but has not furnished the assessment of security requirement as required under the 3rd proviso of the 2019 Tariff Regulations. Further, the Petitioner has not submitted any details regarding variance in the claim for the period 2019-24. In view of this, we are inclined to provisionally allow the security expenses for the period 2019-24, as claimed by the Petitioner. 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 giving all the details included in the security expense and reason of variance thereon. Further, the Petitioner at the time of truing up, shall also furnish the actual security expenses

incurred along with proper justification and assessment in terms of Regulation 35(1)(6) of the 2019 Tariff Regulations.

56. Accordingly, the total O&M expenses, including water charges and security expenses, allowed for the period 2019-24, is summarized as under:

(Rs. in lakh)

		2019-20	2020-21	2021-22	2022-23	2023-24
Installed Capacity (MW) (A)		359.58	359.58	359.58	359.58	359.58
Normative O&M expenses under Regulation 35(1) in Rs. lakh/MW (B)	Claimed	17.58	18.20	18.84	19.50	20.19
	Allowed	**17.58**	**18.20**	**18.84**	**19.50**	**20.19**
Total O&M expenses (C) = (A)*(B)	Claimed	6321.42	6544.36	6774.49	7011.81	7259.92
	Allowed	**6321.42**	**6544.36**	**6774.49**	**7011.81**	**7259.92**
Water Charges (in Rs lakh) (D)	Claimed	1.00	1.00	1.00	1.00	1.00
	Allowed	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Security Expenses (in Rs lakh) (E)	Claimed	1280.38	1113.62	1217.64	1331.70	1456.77
	Allowed	**1280.38**	**1113.62**	**1217.64**	**1331.70**	**1456.77**
Total O&M Expenses (including Water Charges and Capital Spares Consumed) (F) = (C+D+E)	Claimed	7602.80	7658.98	7993.13	8344.51	8717.69
	Allowed	**7602.80**	**7658.98**	**7993.13**	**8344.51**	**8717.69**

Operational Norms

57. The operational norms claimed by the Petitioner, are as under:

	Claimed	Allowed
Normative Annual Plant Availability Factor (NAPAF) (%)	85%	85%
Gross Station Heat Rate (kcal/kwh)	2000	2000
Auxiliary Power Consumption (%)	2.75%	2.75%

Normative Annual Plant Availability Factor

58. Since the operational norms claimed by the Petitioner are in accordance with the proviso to Regulation 49 of the 2019 Tariff Regulations, the same has been allowed.

Interest on Working Capital

59. Regulation 34 of the 2019 Tariff Regulations provides as under:

"34. Interest on Working Capital: (1) The working capital shall cover:
(a)Xxxxxx
(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 Order in Petition No. 410/GT/2020 Page 32 of 37 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.
(c)Xxxxxxx

(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

60. Regulation 34(1)(b)(i) of the 2019 Tariff Regulations provides for fuel cost for 30 days corresponding to the NAPAF. The fuel cost for 30 days for computation of interest on working capital as considered by the Petitioner is allowed in working capital, as under:

(Rs. in lakh)

2019-20 (Leap year)	2020-21	2021-22	2022-23	2023-24 (Leap year)
15674.09	15674.09	15674.09	15674.09	15674.09

61. Based on above discussion, the cost of fuel component in working capital is allowed as under:

(Rs. in lakh)

Year	2019-20 (leap year)	2020-21	2021-22	2022-23	2023-24 (leap year)
Cost of fuel for 30 days corresponding to NAPAF	15674.09	15674.09	15674.09	15674.09	15674.09
Cost of liquid fuel for 15 days corresponding to NAPAF	7837.04	7837.04	7837.04	7837.04	7837.04

Energy Charge Rate (ECR) for computation of working capital

62. The Petitioner has claimed ECR based on the weighted average GCV and price of Naphtha for the preceding three months i.e. October-2018, November-2018 and December-2018 inclusive of the opening stock, normative heat rate and auxiliary power consumption and mode of operation, as under:

	Unit	2019-20 (Leap year)	2020-21	2021-22	2022-23	2023-24 (Leap year)
Capacity	MW	359.58	359.58	359.58	359.58	359.58
Fuel		Naphtha	Naphtha	Naphtha	Naphtha	Naphtha
Normative Heat-Rate	kCal/kWh	2000	2000	2000	2000	2000
Aux. Power Consumption	%	2.75	2.75	2.75	2.75	2.75
Weighted average rate of fuel	/MT	40346.84	40346.84	40346.84	40346.84	40346.84
Weighted average GCV of fuel	Kcal/kg	11329.33	11329.33	11329.33	11329.33	11329.33
Rate of energy charge ex-bus	Paisa/kWh	732.40	732.40	732.40	732.40	732.40

63. Based on the operational norms, weighted average price and GCV of Naphtha used for operation of the plant during preceding three months i.e. October- 2018, November-2018 and December-2018 and mode of operation, the energy charges computed as per the table below may be allowed for purpose of tariff for the period 2019-24.

	Unit	2019-24
Capacity	MW	359.58
Fuel		Naphtha
Normative Heat-Rate	kCal/kWh	2000
Aux. Power Consumption	%	2.75
Weighted average rate of fuel	Rs./MT	40346.84
Weighted average GCV of fuel	kCal/Lt.	11329.33
Rate of energy charge ex-bus	Rs./kWh	7.324

64. However, the said ECR is subject to revision as the Petitioner has furnished the GCV & price of Naphtha for the preceding three months i.e. October-2018, November-

2018 and December-2018, inclusive of the opening stock. The Petitioner at the time of truing up shall furnish the details excluding the opening stock.

Working Capital for O&M Expenses (1 month)

65. The O&M expenses for 1 month, as claimed by the Petitioner for working capital, including water charges and security expenses, is in accordance with Regulation 34(1)(b)(v) of the 2019 Tariff Regulations and are allowed as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
633.57	638.25	666.09	695.38	726.47

Working Capital for Maintenance Spares

66. Regulation 34(1)(b)(iii) of the 2019 Tariff Regulations provides for Maintenance spares @ 30% of the O&M expenses. Accordingly, the maintenance spares as claimed by the Petitioner for working capital, including water charges and security expenses are allowed as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
2280.84	2297.69	2397.94	2503.35	2615.31

Working Capital for Receivables

67. In terms of Regulation 34(1)(b)(iv) 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	23511.27	23511.27	23511.27	23511.27	23511.27
Fixed Charges - for 45 Days	2816.17	2779.18	2777.77	2847.69	2989.83
Total	**26327.44**	**26290.45**	**26289.04**	**26358.96**	**26501.11**

Rate of Interest on Working Capital

68. In accordance with the Regulation 34(3) 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 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, 10.50% (i.e. 1 year SBI MCLR of 7.00% as on 1.4.2021 / 1.4.2022 + 350 bps) for the period 2021-23 and 12.00% (i.e. 1 year SBI MCLR of 8.50% as on 1.4.2023 + 350 bps) for the year 2023-24. Accordingly, interest on working capital is worked out and allowed as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Working Capital for Fuel Cost (30 days generation corresponding to NAPAF)	15674.09	15674.09	15674.09	15674.09	15674.09
Working Capital for Liquid Fuel Stock (15 days generation corresponding to NAPAF)	7837.04	7837.04	7837.04	7837.04	7837.04
Working Capital for Maintenance Spares @ 30% of O&M expenses	2280.84	2297.69	2397.94	2503.35	2615.31
Working Capital for Receivables (45 days)	26327.44	26290.45	26289.04	26358.96	26501.11
Working Capital for O&M expenses (1 month)	633.57	638.25	666.09	695.38	726.47
Total Working Capital	**52752.98**	**52737.52**	**52864.20**	**53068.82**	**53354.02**
Rate of Interest	12.0500%	11.2500%	10.5000%	10.5000%	12.0000%
Interest on Working Capital	**6356.73**	**5932.97**	**5550.74**	**5572.23**	**6402.48**

Annual Fixed Charges for the period 2019-24

69. Based on the above discussion, the annual fixed charges approved for the generating station is summarized as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	1944.22	1944.61	1915.16	2043.29	2053.87
Interest on Loan	0.60	3.14	39.41	74.36	74.46
Return on Equity	7000.47	7002.52	7032.34	7063.55	7068.81
Interest on Working Capital	6356.73	5932.97	5550.74	5572.23	6402.48
O&M Expenses	7602.80	7658.98	7993.13	8344.51	8717.69
Total	**22904.82**	**22542.22**	**22530.78**	**23097.94**	**24317.31**

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

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

Application Fee and Publication expenses

71. The Petitioner has sought reimbursement of fee paid by it for filing the petition for the 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.

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

73. Petition No. 443/GT/2020 is disposed of in terms of the above.

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