

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 235/GT/2020

Coram:

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

Date of Order: 7th May, 2022

IN THE MATTER OF

Petition for approval of tariff of Kopili Hydro Electric Project Stage-II (25 MW) for the period from 1.4.2019 to 31.3.2024

AND

IN THE MATTER OF

North Eastern Electric Power Corporation Limited,
Brookland Compound, Lower New Colony,
Shillong-793 003

...Petitioner

Vs

1. Assam Power Distribution Company Limited,
Bijulee Bhawan', Paltanbazar,
Guwahati-781 001
2. Meghalaya Energy Corporation Limited,
Meter Factory Area, Short Round Road Integrated Office Complex,
Shillong-793 001
3. Tripura State Electricity Corporation Limited,
Bidyut Bhavan, North Banamalipur
Agartala-799 001
4. Power and Electricity Department,
Government of Mizoram, P&E Office Complex, Electric Veng,
Aizwal-796 001



5. Electricity Department
Government of Manipur, Keishampat,
Imphal-795 001
6. Department of Power,
Government of Arunachal Pradesh, Vidyut Bhawan,
Itanagar-791 111
7. Department of Power,
Government of Nagaland,
Kohima-797 001
8. North Eastern Regional Power Committee,
Meghalaya State Housing Finance Co-operative Society Limited Building,
Nongrim Hills,
Shillong-793 003
9. North Eastern Regional Load Despatch Centre,
Dongtiah, Lower Nongrah, Lapalang,
Shillong-793 006

...Respondents

Parties present:

Shri Munin Choudhury, NEEPCO
Shri Ripunjoy Bhuyan, NEEPCO
Ms. Bornali Deori, NEEPCO
Ms. Elizabeth Pyrbot, NEEPCO

ORDER

This petition has been filed by the Petitioner, North Eastern Electric Power Corporation Limited, for approval of tariff of Kopili Hydro Electric Project Stage-II (1 x 25 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').



Background

2. Kopili Hydro Electric Project comprises of three power stations, namely Khandong Power Station (2x25 MW), Kopili Power Station (4x50 MW) and Kopili Stage-II Power Station (1x25 MW). Initially, the project was of the capacity of 150 MW i.e. (2x25 MW) in Khandong Power Station and (2x50 MW) in Kopili Power Station. Thereafter, a capacity of (2x50 MW) was added to Kopili Power Station as KHEP Stage-I Extension. In addition to this, (1x25 MW) Kopili Stage II Power station was added to the project with date of commissioning as 26.7.2004. The Stage-I of the project had been executed to derive maximum benefits in future from the built-in civil works. The project comprises of two concrete dams, viz, Khandong Dam and Umrong Dam and two corresponding reservoirs with two separate water conductor systems and two power houses, namely, Khandong power Station and Kopili Power Station. Khandong Dam is across the river Kopili, which is a perennial river. Water from this reservoir is diverted through a tunnel of diameter 4.5 meters and length of 2.76 km to the Khandong Powerhouse (2x25 MW). Umrong Dam is across a small tributary of the river Kopili, called Umrong, which has a very less discharge during the lean season. The tail race discharge from Khandong Power Station is diverted to Umrong reservoir through an open channel and water from this reservoir is diverted through a channel of diameter 4.5 meter and a length of 5.5 km to Kopili Power Station (4x50 MW) located on the banks of river Kopili on downstream side.

3. The date of commercial operation of the generating station is 26.7.2004. The scope of works of the generating station includes the construction of an additional powerhouse and a by-pass tunnel of 275-meter length. The by-pass tunnel bifurcates from the main



tunnel just beyond the surge-shaft for which boring was done at the time of construction of Kopili HEP Stage-I.

4. Petition No. 372/GT/2019 was filed by the Petitioner for truing-up of tariff of the generating station for the 2014-19 tariff period and the Commission vide its order dated 25.3.2022 approved the capital cost and annual fixed charges as under:

Capital Cost allowed

	<i>(Rs. in lakh)</i>				
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	8215.32	8345.80	8352.06	8873.75	8880.96
Additional capital expenditure allowed (Net)	130.48	6.26	521.69	7.21	337.54
Closing Capital Cost	8345.80	8352.06	8873.75	8880.96	9218.50

Annual Fixed Charges allowed

	<i>(Rs. in lakh)</i>				
	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	363.89	366.89	378.50	99.12	106.40
Interest on Loan	72.33	48.12	33.23	28.96	30.80
Return on Equity	513.97	557.79	651.96	605.08	571.00
O&M Expenses	321.00	342.33	365.07	389.32	415.19
Interest on Working Capital	39.60	41.30	44.65	38.38	39.24
Total	1310.79	1356.43	1473.40	1160.87	1162.62

Present Petition

5. The Petitioner has filed the present petition for determination of tariff of the generating station for the period from 1.4.2019 to 31.3.2024 in terms of the provisions of the 2019 Tariff Regulations. The capital cost and annual fixed charges claimed by the Petitioner in the present petition are as under:



Capital Cost claimed

	(Rs. in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Capital Cost	9266.87	9302.37	9926.37	11228.37	11489.37
Add: Addition during the year	43.50	753.00	1700.00	350.00	235.00
Less: De-capitalization during the year	8.00	129.00	398.00	89.00	69.00
Less: Reversal during the year	0.00	0.00	0.00	0.00	0.00
Add: Discharges during the year	0.00	0.00	0.00	0.00	0.00
Closing Capital Cost	9302.37	9926.37	11228.37	11489.37	11655.37

Annual Fixed Charges claimed

	(Rs. in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	93.92	106.12	143.27	174.77	183.77
Interest on Loan	32.98	43.37	86.99	117.80	115.43
Return on Equity	556.24	564.10	587.04	605.65	610.74
Interest on Working Capital	60.01	59.93	63.80	67.45	70.22
O&M Expenses	1130.56	1184.45	1240.90	1300.05	1362.02
Total	1873.71	1957.97	2122.00	2265.72	2342.18

6. None of the Respondents have filed replies in the matter. The matter was heard on 24.8.2021 through virtual conferencing and the Commission reserved its order in the petition. Accordingly, based on the submissions and the documents available on record, we proceed to determine the tariff of the generating station for the 2019-24 tariff period as stated in the subsequent paragraphs.

Capital Cost

7. Clause(1) of Regulation19 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. However, the capital cost for an existing project is governed as per clause (3) of Regulation19 of the 2019 Tariff Regulations, which is provided as under:



“The Capital cost of an existing project shall include the following:

(a) Capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;

(b) Additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these regulations;

(c) Capital expenditure on account of renovation and modernization as admitted by this Commission in accordance with these regulations;

(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 up to 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....”

8. The opening capital cost considered by the Petitioner as on 1.4.2019 is Rs.9266.87 lakh. However, the Commission, in its order dated 25.3.2022 in Petition No.372/GT/2019 had allowed the closing capital cost of Rs.9218.50 lakh as on 31.3.2019. Accordingly, in terms of Regulation 19 (3) of the 2019 Tariff Regulations, the capital cost of Rs.9218.50 lakh as on 31.3.2019 has been considered as the opening capital cost as on 1.4.2019, for the purpose of determination of tariff for 2019-24 tariff period.

Discharge of liabilities

9. The Petitioner has not claimed any discharge of liabilities during the 2019-24 tariff period. However, the Petitioner is directed to submit the reconciliation statement, showing details of such liabilities, as per balance sheet, duly certified by auditor along with the break-up of discharges, included in the liabilities discharged within the original scope of work and those other than within the original scope of work of the project, at the time of truing-up of tariff for the 2019-24 tariff period.



Additional Capital Expenditure

10. Clause (2) of Regulation 9 of the 2019 Tariff Regulations provides that the application for determination of tariff shall be on admitted capital cost including additional capital expenditure already admitted and incurred up to 31.3.2019 (either based on actual or projected additional capital expenditure) and estimated additional capital expenditure for the respective years of the 2019-24 tariff period along with the true up for the 2014-19 period in accordance with the 2014 Tariff Regulations. Clauses of Regulation 25 & 26 of the 2019 Tariff Regulations, provides as follows:

“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 de-capitalization 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.”

11. The Petitioner has submitted that the net projected additional capital expenditure of Rs.3081.50 lakh has been claimed till 31.3.2024 under various provisions of Regulations 25 and 26 of the 2019 Tariff Regulations. It is noticed that the Petitioner has claimed total projected additional capital expenditure for Rs.615.00 lakh for the following assets/works, in line with R&M RLA studies carried out by CPRI in respect of Khandong generating station owned by the Petitioner:

Sl. No	Head of Work/ Equipment	Claimed amount (Rs in lakh)	Regulation	Justification submitted by the Petitioner
2020-21				
1	Replacement of Shaft Seal	25.00	25(2)(c)	During R&M RLA studies carried out by CPRI, it suggested that all underwater parts



Sl. No	Head of Work/ Equipment	Claimed amount (Rs in lakh)	Regulation	Justification submitted by the Petitioner
	with SS material			as well as other components which are in direct contact with reservoir water should be made of suitable grade stainless steel (SS) material to extend the life of the plant. So, in line with the suggestions in Khandong power station, the shaft seal of this generating station, is also required to be of SS material as the common reservoir water is used at both power stations. The Commission has already approved the SS MIV for the generating station which was completed in the 2014-19 tariff period.
2	Conversion of Generator Transformer Cooling System to OFAF	90.00	25(2)(c)	Due to lack of natural elevation and adequate backup of neutral pH cooling water, the present OFWF GT coolers cannot run from closed loop system. As CPRI suggested OFAF cooling in all GTs of Khandong power station, during R&M RLA studies, the same is required to be adopted in this generating station also which will eliminate the failure of GT, due to penetration of water in oil and will extend the life of the GT.
3	Replacement of Station Service Transformer and related Bay equipment	100.00	25(2)(b)	The expenditure is claimed in accordance with the tests that were carried out during RLA study of Khandong station by CPRI. The present 7.5 MVA transformer having failure history and 1 MVA SST having oil leakage, OTI & WTI issues as well as ageing may fail at any time. So, CPRI suggested to replace all for better reliability or else the station will be completely blacked out in case the transformer fails.
4	Replacement of SS Bypass Valve and Air Valve	100.00	25(2)(b)	During the R&M RLA studies carried out by CPRI, it was suggested that all underwater parts as well as other components which are in direct contact with reservoir water should be made of suitable grade stainless steel material so as to extend the life of the plant. So, in line with the suggestions in Khandong power station, the bypass and air valves of this generating station are also required to be of SS material, as the common reservoir water is used at both power stations. The Commission has already approved the SS MIV for generating station which was already completed in the 2014-19 tariff period.



Sl. No	Head of Work/ Equipment	Claimed amount (Rs in lakh)	Regulation	Justification submitted by the Petitioner
2022-23				
5	Replacement of existing MS bush Housing with SS material incorporate Self Lubricating Bushes	300.00	25(2)(c)	During the R&M RLA studies carried out by CPRI, it was suggested that all underwater parts as well as other components which are in direct contact with reservoir water should be made of suitable grade stainless steel material to extend the life of the plant. So, in line with the suggestions in Khandong power station, the GV bush housing of this generating station is also required to be of SS material as the common reservoir water is used at both power stations. The Commission vide order dated 22.2.2016 in Petition No. 45/GT/2015 had already approved the SS MIV for generating station which was completed in the 2014-19 tariff period.

12. It is evident that the claim of the Petitioner for additional capital expenditure in respect of the above said assets/works for this generating station are mainly based on the suggestions/reports of CPRI in respect of the R&M RLA studies carried out by the Petitioner for its another generating station i.e. Khandong generating station. We are of the view that the same suggestions/reports cannot be adopted for this generating station. Accordingly, we find no reason to consider these claims in this order. However, considering the vintage of the plant, we grant liberty to the Petitioner to approach the Commission, by way of fresh petition, to claim the expenditure for these assets/works, based on RLA studies/recommendations for this generating station i.e. Kopili generating station and the same will be considered as per applicable regulations for R&M of generating stations.

13. The year-wise details of the projected additional capital expenditure claimed by



the Petitioner for other assets/works, are as under:

2019-20

(Rs. in lakh)

Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
1	Treatment of Underwater parts, cladding, coating/ tiling etc.	15.00	25(2)(b)	The Petitioner has submitted that the work has to be carried out regularly in acid affected underwater parts which are embedded in concrete and can't be replaced. In order to, replace these parts, the complete excavation of concrete is not possible and thus, treatment is necessary to protect the underwater parts from further erosion and extend its life span to avoid complete outage of the unit. Since the claim is in the nature of O&M expenses, the same is not allowed	0.00
2	Replacement of Generator Transformer Fire Hydrant System	3.50	25(2)(b)	The Petitioner has submitted that the present high-pressure fire hydrant system was installed since the commissioning of the plant. In order to provide adequate safety in case of fire, the system is required to be upgraded by incorporation of protection logic with generator breakers, unit tripping etc. Based on submissions, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations on replacement basis. It is noticed that the Petitioner has not considered the de-capitalization of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.1.60 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 26 of	3.50



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
				this order. The Petitioner is directed to submit management certificate with regard to the obsolescence of old asset at the time of truing up of tariff	
3	Procurement of 410KVA excitation Transformer	25.00	25(2)(b)	<p>The Petitioner has submitted that the present 410KVA excitation transformer supplied by M/s BHEL during the commissioning of the unit was having some issues like high winding temperature, transformer trouble alarm etc. After discussion with OEM, it transpired that the transformer is dry cast and attending to these issues may not be financially beneficial as the transformer has to be sent to BHEL Jhansi factory and the unit will be out during the whole period and thus it was suggested to replace with a new one.</p> <p>Based on submissions, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations on replacement basis. It is noticed that the Petitioner has not considered the de-capitalization of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.11.45 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 24 of this order. The Petitioner is, however, directed to submit management certificate with regard to certification for obsolescence of old asset at the time of truing up of tariff.</p>	25.00
	Total Amount	43.50			



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
	Claimed				
	Total Amount Allowed				28.50

14. Accordingly, the total projected additional capital expenditure of Rs.28.50 lakh is allowed in 2019-20.

2020-21

(Rs. in lakh)

Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
1	Replacement of CO2 fire-fighting with modern Technology	50.00	25(2)(c)	The Petitioner has submitted that the present generator firefighting system is conventional type and has been installed since the commissioning of the plant. It is required to install the latest technology addressable fully automatic CO2 firefighting system for better safety and reliability. The Petitioner has claimed the expenditure for replacement of asset on account of obsolescence of technology/ upgradation. In view of this, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations, on replacement basis. It is noticed that the Petitioner has not considered the de-capitalisation of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.21.81 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 24 of this order. The Petitioner is, however, directed to submit management certificate with regard to certification for	50.00



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
				obsolescence of old asset at the time of truing up.	
3	Procurement of New DG set with higher capacity	50.00	25(2)(b)	<p>The Petitioner has submitted that the existing DG set is of Much Lower Capacity (125 KVA) and it is planned to use the same as back up DG for Khandong too. Presently, 400KVA DG is available at Khandong power station and the DG of Kopili Stage-II may be upgraded to the near most rating.</p> <p>Based on submissions, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations on replacement basis. It is noticed that the Petitioner has not considered the de-capitalisation of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.21.81 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 26 of this order. The Petitioner is directed to submit management certificate with regard to the obsolescence of old asset at the time of truing up of tariff.</p>	50.00
4	Procurement and Installation of CCTV	20.00	26(1)(d)	<p>The Petitioner has submitted that installation of CCTV is required for safety and security purpose. Considering the fact that the additional capitalisation is on account of higher safety and security of generating station, the expenditure claimed is disallowed under Regulation 26(1)(d) of the 2019 Tariff Regulations.</p>	20.00
5	New Higher capacity UAT	50.00	25(2)(b)	<p>The Petitioner has submitted that with Closed loop system</p>	50.00



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
	and associated panels			<p>and Disaster management pumps, the load on UAT increases. The Closed loop pumps had to run from UAT, otherwise unit may trip in the event of Power Supply failure. So, approx. 500KVA UAT will be required in place of present 250KVA UAT.</p> <p>Based on submissions, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations on replacement basis. It is noticed that the Petitioner has not considered the de-capitalisation of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.21.81 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 24 of this order. The Petitioner is, however, is directed to submit management certificate with regard to certification for obsolescence of old asset at the time of truing up.</p>	
6	High Mast Tower at SY	50.00	26(1)(d)	The Petitioner has submitted that the additional expenditure is for providing improved illumination in Power Station & Switchyard and surrounding areas for the Plant operation purpose. Considering the fact that the additional capitalisation does not pertain to the account of higher safety of generating station, the expenditure claimed is not allowed .	0.00
7	Providing air conditions system for control panels	8.50	25(2)(c)	The Petitioner has submitted that the electronic control panels and modules are supposed to operate within a particular temperature environment. But	0.00



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
				<p>due to non-maintenance of the required temperature, the module fails frequently and resulting in the outage of the unit for long time. So, it is required to make the closed cabinet as well as provide air condition environment to all electronic module panels so that their life may be extended and provide reliable operation for better performance of the plant and safety reason.</p> <p>Since the claim of the Petitioner is of in the nature of O&M nature expenses, the additional capital expenditure claimed is not allowed.</p>	
8	Concreting & stone spreading of 33KV switchyard including cable trench	30.00	25(2)(c)	<p>The Petitioner has submitted that the existing stones are not adequate for the safety purpose of operation against touch potential and growth of frequent vegetations. So, the treatment of switchyard with concreting and proper stone spreading is required including construction of proper cable trench.</p> <p>Since the claim of the Petitioner is in the nature of O&M expenses, the additional capital expenditure claimed is not allowed.</p>	0.00
9	New 24 Volt Battery Bank with Charger for Control System Supply	15.00	25(2)(c)	<p>The Petitioner has submitted that the additional expenditure is as a backup of DC/DC converter system. Outage of DC/DC converter cards had led to outage of the unit for almost one month in the year 2017-18. So, it was decided to have dedicated DC power supply source for the control system.</p> <p>The Petitioner has claimed the expenditure for replacement of asset on account of</p>	15.00



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
				obsolescence of technology/ upgradation. In view of this, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations, on replacement basis. It is noticed that the Petitioner has not considered the de-capitalisation of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.6.54 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 24 of this order. The Petitioner is, however, is directed to submit management certificate with regard to certification for obsolescence of old asset at the time of truing up.	
10	Procurement of One 14 Ton Hydra Crane	19.50	25(2)(c)	The Petitioner has submitted that as the existing Hydra is nearly 35 years old and no spare parts available for repairing of the same, one new Hydra Crane is required for maintenance activities of the plant. The Petitioner has claimed the expenditure for replacement of asset on account of obsolescence of technology/ upgradation. In view of this, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations, on replacement basis. It is noticed that the Petitioner has not considered the de-capitalisation of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.8.51 lakh has been considered for the old, replaced asset under 'Assumed	19.50



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
				Deletions' in paragraph 24 of this order. The Petitioner is, however, directed to submit management certificate with regard to certification for obsolescence of old asset at the time of truing up.	
11	New UPS for emergency AC supply	10.00	25(2)(c)	The Petitioner has submitted that emergency dedicated AC power supply is required in case of grid supply failure to run all equipment excluding those which are running from UAT for smooth operation of the plant. Since the claim of the Petitioner is in the nature of O&M expenses, the additional capital expenditure claimed is not allowed .	0.00
12	Treatment of Underwater parts with Coating/Tiling	25.00	25(2)(b)	The Petitioner has submitted that the operations have to be carried out regularly in acid affected underwater parts which are embedded in concrete and can't be replaced. In order to replace these parts, the complete excavation of concrete is not possible and thus in situ treatment is most necessary to protect the underwater parts from further erosion and to extend its life span and to avoid complete outage of the unit. Since the claim of the Petitioner is in the nature of O&M expenses, the additional capital expenditure claimed is not allowed .	0.00
14	Up-gradation of dewatering & Drainage System	25.00	25(2)(b)	The Petitioner has submitted that due to acidic corrosion, unforeseen leakages appear now and then and the additional expenditure is required to ensure safety of the power house. Presently, two nos. dewatering & drainage pumps	25.00



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
				<p>are available which are not sufficient to evacuate leakage water in case of emergency. So, to provide safety of the plant for avoiding flooding, the upgradation is required.</p> <p>Based on submissions, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations on replacement basis. It is noticed that the Petitioner has not considered the de-capitalisation of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.10.91 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 24 of this order. The Petitioner is, however, directed to submit management certificate with regard to certification for obsolescence of old asset at the time of truing up.</p>	
15	Replacement of Generator Circuit Breaker and Station Supply Transformer Circuit Breaker, related bay equipment like CT, isolators, hardware, conductors, Las, insulators etc.	50.00	25(2)(b)	<p>The Petitioner has submitted that the existing circuit breakers are pneumatic type and thus facing problems of spares as they were installed during commissioning of the plant. So, the spring operated SF6 CBs are required to replace the same for better & reliable operation. Again, due to upgradation of Khandong for increasing loading capacity as per NERPC/RLDC requirement, the existing bay equipment like CT, conductor, isolators, hardware may be required to be replaced.</p> <p>Based on submissions, the additional capital expenditure claimed is allowed under</p>	50.00



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
				Regulation 25(2)(c) of the 2019 Tariff Regulations on replacement basis. It is noticed that the Petitioner has not considered the de-capitalisation of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.21.81 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 24 of this order. The Petitioner is, however, directed to submit management certificate with regard to certification for obsolescence of old asset and clarification.	
16	Replacement of Neutral CT and Lightning Arrestor of Generator Transformer	10.00	25(2)(b)	<p>The Petitioner has submitted that the EOT was manufactured by WMI and the OEM has already conducted the detailed survey & testing of the crane and suggested for replacement of its components so that the service life can be extended as well as reliability of the EOT for handling the Turbine-Generator components can be increased.</p> <p>Based on submissions, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations on replacement basis. It is noticed that the Petitioner has not considered the de-capitalisation of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.4.36 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 24 of this order. The Petitioner is, however, is directed to submit</p>	10.00



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
				management certificate with regard to certification for obsolescence of old asset at the time of truing up.	
17	Replacement of 100/25 T capacity EOT crane aux hoist rope & other accessories	20.00	25(2)(b)	<p>The Petitioner has submitted that the EOT was manufactured by WMI and the OEM already conducted detailed survey & testing of the crane and suggested for replacement of its components so that service life as well as reliability of the EOT can be extended.</p> <p>Based on submissions, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations on replacement basis. It is noticed that the Petitioner has not considered de-capitalisation of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.8.73 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 24 of this order. The Petitioner is, however, directed to submit management certificate of competent authority with regard to certification for obsolescence of old asset at the time of truing up.</p>	20.00
20	Procurement of LED luminaries	5.00	25(2)(b)	<p>The Petitioner has submitted that as per directives of different Government agencies, the energy efficient illumination is required to be used for saving energy consumption. So, the present conventional type illumination has to be replaced with high energy efficient LED illumination which will reduce the Auxiliary energy consumption and will also be</p>	0.00



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
				financially beneficial. Since the claim of the Petitioner is in the nature of O&M nature expenses, the additional capital expenditure claimed is not allowed .	
	Total Amount Claimed	753.00			
	Total Amount Allowed				309.50

15. Accordingly, the total projected additional capital expenditure of Rs.309.50 lakh is allowed in 2020-21.

2021-22

(Rs. in lakh)

Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and Reasons of admissibility	Allowed
1	Replacement of All static Relays with Numerical Relays and laying of OFC for Line Differential Protection	100.00	25(1)(a)	The Petitioner has submitted that as per IEGC and CEA/CERC guidelines, all protection relays should be of numerical type and line differential protection should be used for short lines for better protection. The Petitioner has claimed the expenditure for replacement of asset for compliance to IEGC and the CEA/CERC guidelines. In view of this, the additional capital expenditure claimed is allowed under Regulation 25(1)(a) of the 2019 Tariff Regulations. It is noticed that the Petitioner has not considered the de-capitalization of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.41.55 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 24 of this order.	100.00



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and Reasons of admissibility	Allowed
				The Petitioner is, however, directed to submit management certificate with regard to certification for obsolescence of old asset at the time of truing up.	
2	Up-gradation of SCADA/ HMI system with modern Technology including automation and AGC as per CERC guidelines and NLDC requirement	100.00	25(2)(c)	<p>The Petitioner has submitted that presently only online vibration monitor is available in the plant which was installed since commissioning of the plant. In order to provide continuous running of the equipment for better operation and extend the life by avoiding forced outage with proper preventive maintenance, regular monitoring of Generators and Transformers is required.</p> <p>The Petitioner has claimed the expenditure for replacement of asset on account of obsolescence of technology/ upgradation. In view of this, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations on replacement basis. It is noticed that Petitioner has not considered the de-capitalization of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.41.55 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 24 of this order. The Petitioner is, however, directed to submit management certificate with regard to certification for obsolescence of old asset at</p>	100.00



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and Reasons of admissibility	Allowed
				the time of truing up.	
3	Condition Monitoring of Transformers and Generators	100.00	25(2)(b)	<p>The Petitioner has submitted that presently only online vibration monitor is available in the plant which was installed since commissioning of the plant. To provide continuous condition monitoring of the equipment for better operation and to extend the life of equipment by avoiding forced outage, the condition monitoring of Generators and Transformers is required.</p> <p>The Petitioner has claimed the expenditure for replacement of asset on account of obsolescence of technology/upgradation. In view of this, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations on replacement basis. It is noticed that Petitioner has not considered the de-capitalization of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.41.55 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 24 of this order. The Petitioner is, however, directed to submit management certificate with regard to certification for obsolescence of old asset at the time of truing up.</p>	100.00
4	Pro-control System upgradation including	1000.00	25(2)(c)	<p>The Petitioner has submitted that the present Pro-control technology of M/s BHEL is outdated and not</p>	1000.00



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and Reasons of admissibility	Allowed
	governor & DVR			<p>communicable with latest protocol like IEC 60870-5-101,104. Again, new AGC regulation also came for 25MW hydro units. Keeping all the latest requirements, the upgradation of complete plant & SCADA is must so that it can be run remotely & smoothly with better event & disturbance loggers to identify & troubleshoot the problems in case of emergency. These features will provide user-friendly, reliable operation as well as all information to RLDC for smooth operation of national grid.</p> <p>The Petitioner has claimed the expenditure for replacement of asset on account of obsolescence of technology/upgradation. In view of this, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations on replacement basis. It is noticed that Petitioner has not considered the de-capitalization of old asset against which the expenditure is claimed. Accordingly, the amount of Rs. 415.52 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 24 of this order. The Petitioner is, however, directed to submit management certificate with regard to certification for obsolescence of old asset. at the time of truing up.</p>	
5	Procurement of	350.00	25(2)(d)	The Petitioner has submitted	120.00



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and Reasons of admissibility	Allowed
	Turbine Shaft with New SS material			<p>that Rs.120.00 lakh was allowed in the year 2017-18 by the Commission in order dated 22.2.2016 in 45/GT/2015. However, the same couldn't be completed due to ongoing analysis for up-rating of Khandong. The Shaft has a history of repeated failures due to acidic corrosion and is being repaired locally. A new shaft of acid proof material will eliminate the problem permanently.</p> <p>Considering the fact that the additional capitalization is on account of replacement of the asset which had been allowed by the Commission earlier and has spilled over, the expenditure claimed is allowed under Regulation 25(2)(d) of the 2019 Tariff Regulations by restricting the same to Rs.120.00 lakh as allowed earlier. The Petitioner is, however, directed to submit management certificate at the time of truing up.</p>	
6	High Mast Tower at Kopili stage-II P.S.	50.00	26(1)(d)	<p>The Petitioner has submitted that the asset installation is important in order to provide improved illumination in the generating station, Switchyard and surrounding areas for the Plant operation as well as for security reasons. Presently the conventional Halogen and LED illumination is available which are not sufficient for night working condition. Since the claim of the Petitioner is in the nature of O&M expenses, the additional capital expenditure claimed is not</p>	0.00



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and Reasons of admissibility	Allowed
				allowed.	
	Total Amount Claimed	1700.00			
	Total Amount Allowed				1420.00

16. Accordingly, the total projected additional capital expenditure of Rs.1420.00 lakh is allowed in 2021-22.

2022-23

(Rs. in lakh)

Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and Reasons of admissibility	Allowed
1	Renovation of 100/25 T capacity EOT crane with modern Technology	50.00	25(2)(c)	The Petitioner has submitted that The EOT was manufactured by WMI and the OEM already conducted detailed survey & testing of the crane and suggested for renovation / replacement of its components so that it can extend the service life as well as reliability of the EOT for handling the Turbine-Generator components efficiently. The Petitioner has claimed the expenditure for replacement of asset on account of obsolescence of technology/ upgradation. In view of this, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations on replacement basis. It is noticed that the Petitioner has not considered the de-capitalization of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.19.79 lakh has been considered for the old replaced asset under 'Assumed Deletions' in paragraph 24 of this order. The	50.00



Sl. No.	Head of Work/ Equipment	Claimed	Regulation	Justification and Reasons of admissibility	Allowed
				Petitioner is, however, directed to submit management certificate with regard to certification for obsolescence of old asset at the time of truing up.	
	Total Amount Claimed	350.00			
	Total Amount Allowed				50.00

17. Accordingly, the total projected additional capital expenditure of Rs.50.00 lakh is allowed in 2022-23.

2023-24

(Rs. in lakh)

Sl. No.	Head of Work / Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
1	Replacement/ Up gradation of 220 V battery Charger	20.00	25(2)(c)	<p>The Petitioner has submitted that the existing 220 V charger was installed during commissioning of the plant. Due to ageing, it's some components/ modules have become outdated and thus the manufacturer is not able to provide them as and when required. So, it is required to be upgraded / replaced for better safety of the plant as without the DC source, the plant protection system can't run.</p> <p>The Petitioner has claimed the expenditure for replacement of asset on account of obsolescence of technology/ upgradation. In view of this, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations on replacement basis. It is noticed that the Petitioner has not considered</p>	20.00



Sl. No.	Head of Work / Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
				the de-capitalization of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.7.54 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 24 of this order. The Petitioner is, however, directed to submit management certificate with regard to certification for obsolescence of old asset at the time of truing up.	
2	Procurement of generator transformer	200.00	25(2)(b)	The Petitioner has submitted that the existing GT has been taken from Khandong power station. So, there is a chance of failure of the same as it is already aged. So, a new GT is required to replace as & when required. Since the claim of the Petitioner is in the nature of spares, which is not permissible after the cut-off date of the generating station, the additional capital expenditure claimed is not allowed .	0.00
3	New HS lubricating Oil system & brake-jack system	15.00	25(2)(c)	The Petitioner has submitted that the existing HS lubrication system & brake jack system has become old and requires more times than desirable to make ready the unit. So, to minimize the outage time, the systems should be replaced which will provide reliability and safety of the T-G unit. The Petitioner has claimed the expenditure for replacement of asset on account of obsolescence of technology/upgradation. In	15.00



Sl. No.	Head of Work / Equipment	Claimed	Regulation	Justification and reasons of admissibility	Allowed
				view of this, the additional capital expenditure claimed is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations which is on replacement basis. It is noticed that Petitioner has not considered the de-capitalization of old asset against which the expenditure is claimed. Accordingly, the amount of Rs.5.65 lakh has been considered for the old, replaced asset under 'Assumed Deletions' in paragraph 24 of this order. The Petitioner is, however, is directed to submit management certificate with regard to certification for obsolescence of old asset at the time of truing up.	
	Total Amount Claimed	235.00			
	Total Amount Allowed				35.00

18. Accordingly, the total projected additional capital expenditure of Rs.35.00 lakh is allowed in 2023-24.

19. Based on the above, the additional capital expenditure allowed for the 2019-24 tariff period is as under:

	<i>(Rs. in lakh)</i>				
	2019-20	2020-21	2021-22	2022-23	2023-24
Additional capital expenditure allowed within the original scope of work of project (a)	28.50	289.50	1420.00	50.00	35.00
Additional capital expenditure allowed other than the original scope of work of project (b)	0.00	20.00	0.00	0.00	0.00
Total Additional capital Expenditure allowed (c)=[(a)+(b)]	28.50	309.50	1420.00	50.00	35.00



Decapitalization

20. The Petitioner has claimed de-capitalization (as per Form 'De-cap details') for assets/works such as Replacement of Generator Transformer Fire hydrant system, Replacement of CO₂ firefighting with modern technology, New higher capacity UAT and associated panels etc., which are summarized as under:

<i>(Rs. in lakh)</i>				
2019-20	2020-21	2021-22	2022-23	2023-24
8.00	129.00	398.00	89.00	69.00

21. As regards de-capitalization, Regulation 26(2) of the 2019 Tariff Regulations states as under:

“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 de-capitalization 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..”

22. It is observed that the Petitioner has claimed the projected decapitalization on 'Assumed Deletion' value of old assets and the same is dealt below.

Assumed Deletions

23. As per 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 original value of the old asset. However, in certain cases, where the de-capitalization is proposed to be affected during the future years to the 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".

24. On scrutiny of the assumed deletions claimed by the Petitioner and considering the vintage of the plant, the de-capitalized value furnished by the Petitioner appears to be on lower side. It is to be noted that the gross value of the assets de-capitalized under 'assumed deletions' as considered by the Petitioner based on WPI and the capitalized value of new asset, is not acceptable. Therefore, the methodology of arriving at the fair value of the de-capitalized asset, i.e. escalation rate of 5% per annum from the COD has been considered in order to arrive at the gross value of old asset in comparison to the cost of new asset. In the present petition, the year of COD of the generating station is 2004-05. We have considered the value of asset under consideration as on COD as 100 and escalated it @5% till the year during which additional capital expenditure is claimed against replacement of the same. The amount claimed for additional capital expenditure against the asset is multiplied by the derived ratio from above two values i.e. value in year of COD divided by value in capitalized year.

25. Further, the Petitioner has claimed assets/ works on replacement basis such as Treatment of Underwater parts, cladding, coating / tiling etc. Replacement of Generator Transformer Fire Hydrant System, Procurement of 410 KVA excitation Transformer, Replacement of CO2 firefighting with modern Technology, Replacement of Shaft Seal with SS material, New Higher capacity UAT and associated panels, Procurement of One 14 Ton Hydra Crane, Up-gradation of dewatering & Drainage System, etc., which are allowed on projection basis and the Petitioner has claimed these assets on replacement basis, but the



de-capitalized value of the old assets has not been furnished. Further, decapitalization for assets/works has not been considered for additional capital expenditure, which are not allowed. Accordingly, the de-capitalized value of the assets/ works has been calculated in terms of the above-mentioned methodology as in paragraph 24 above. Accordingly, the 'assumed deletions' claimed and allowed for the purpose of tariff are detailed as under:

Year of Claim	Asset/work	Amount Claimed	(Rs. in lakh) Assumed Deletion	
			Claimed	Allowed
2019-20	Replacement of Generator Transformer Fire Hydrant System	3.50	1.00	1.60
2019-20	Procurement of 410KVA excitation Transformer	25.00	7.00	11.45
2020-21	Replacement of CO2 firefighting with modern Technology	50.00	15.00	21.81
2020-21	New Higher capacity UAT and associated panels	50.00	15.00	21.81
2020-21	Procurement of One 14 Ton Hydra Crane	19.50	0.00	8.51
2020-21	Up-gradation of dewatering & Drainage System	25.00	0.00	10.91
2020-21	Replacement of Generator Circuit Breaker and Station Supply Transformer Circuit Breaker, related bay equipment's like CT, isolators, hardware's, conductors, Las, insulators etc.	50.00	15.00	21.81
2020-21	Replacement of Neutral CT and Lightning Arrestor of Generator Transformer	10.00	1.00	4.36
2020-21	Replacement of 100/25 T capacity EOT crane aux hoist rope & other accessories	20.00	0.00	8.73
2020-21	Procurement of New DG set with higher capacity	50.00	50.00	21.81
2020-21	New 24 Volt Battery Bank with Charger for Control System Supply	15.00	0.00	6.54
2021-22	Replacement of All static Relays with Numerical Relays and laying of OFC for Line Differential Protection	100.00	0.00	41.55
2021-22	Condition Monitoring of Transformers and Generators	100.00	0.00	41.55
2021-22	Pro-control System upgradation including governor & DVR	1000.00	295.00	415.52
2021-22	Up-gradation of SCADA/ HMI system with modern Technology including automation and AGC as per CERC guidelines and NLDC requirement	100.00	0.00	41.55
2022-23	Renovation of 100/25 T capacity EOT crane with modern Technology	50.00	0.00	19.79
2023-24	New HS lubricating Oil system & brake-jack	15.00	4.00	5.65



Year of Claim	Asset/work	Amount Claimed	Assumed Deletion	
			Claimed	Allowed
	system			
2023-24	Replacement/ Up gradation of 220 V battery Charger	20.00	6.00	7.54

26. Based on above, the decapitalizations on replacement basis for assets allowed for the 2019-24 tariff period are as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24	Total
13.06	126.31	540.18	19.79	13.19	712.52

Capital Cost allowed for the 2019-24 tariff period

27. As stated, the closing capital cost as on 31.3.2019 is Rs.9218.50 lakh, as allowed by the Commission vide order dated 25.3.2022 in Petition No. 372/GT/2019 during truing up exercise for the 2014-19 period. The same has been considered as cost as on 1.4.2019. Accordingly, the capital cost considered for the purpose of tariff for the 2019-24 period is as follows:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Capital cost	9218.50	9233.94	9417.13	10296.96	10327.17
Add: Addition during the year/ period	28.50	309.50	1420.00	50.00	35.00
Less: Decapitalization considered under Assumed Deletions	13.06	126.31	540.18	19.79	13.19
Closing Capital cost	9233.94	9417.13	10296.96	10327.17	10348.98
Average capital cost	9226.22	9325.54	9857.04	10312.06	10338.07

Debt-Equity Ratio

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

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



- i. where equity actually deployed is less than 30% of the capital cost, actual equity shall be considered for determination of tariff:
- ii. the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment:
- iii. any grant obtained for the execution of the project shall not be considered as a part of capital structure for the purpose of debt: equity ratio.”

29. The gross normative loan and equity amounting to Rs.6452.95 lakh and Rs.2765.54 lakh, respectively, on 31.3.2019 as considered in order dated 25.3.2022 in Petition No. 372/GT/2019, have been considered as the opening normative loan and equity as on 1.4.2019. Further, in terms of above regulations, the normative debt equity ratio of 70:30 has been considered for admitted additional capital expenditure.

The opening and closing debt and equity for the 2019-24 tariff period is as under:

Asset	As on 1.4.2019		Net Additional Capitalization during 2019-24		As on 31.3.2024	
	Amount	%	Amount	%	Amount	%
Debt	6452.95	70.00%	791.34	70.00%	7244.29	70.00%
Equity	2765.54	30.00%	339.14	30.00%	3104.69	30.00%
Total	9218.50	100.00%	1130.48	100.00%	10348.98	100.00

Return on Equity

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

- (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. 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:*

$$\text{Rate of pre-tax return on equity} = \text{Base rate} / (1-t)$$

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 1,000 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 trueing up, shall be recovered or refunded to beneficiaries or the long-term transmission customers, as the case may be, on year to year basis."*

32. For grossing up of ROE during the 2019-24 tariff period, the Petitioner has applied the MAT rate of 17.472% for the year 2019-20. The same has been allowed, subject to trueing-up. Accordingly, ROE has been worked out and allowed as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Gross Notional Equity(A)	2765.54	2770.18	2819.13	3083.08	3092.14
Addition due to additional capitalization(B)	4.63	48.96	263.95	9.06	6.54
Closing Notional Equity (C) = [(A + B)]	2770.18	2819.13	3083.08	3092.14	3098.69
Average Equity(D) = [(A+C)/2]	2767.86	2794.66	2951.11	3087.61	3095.42
Return on Equity (Base Rate) (E)	16.500%	17.47%	17.47%	17.47%	17.47%
Tax rate for the year(F)	17.472%	16.50%	16.50%	16.50%	16.50%
Rate of Return on Equity (G)	19.993%	19.99%	19.99%	19.99%	19.99%
Return on Equity (H) = [(D x G)]	553.38	558.74	590.01	617.31	618.87

33. As regards ROE for the 2019-24 tariff period, in respect of additional capitalization after cut-off date and beyond the original scope, excluding the additional capitalization



due to change in law, the same has been computed at the weighted average rate of interest on loan portfolio of the generating station. Accordingly, ROE has been worked out and allowed as under:

	<i>(Rs. in lakh)</i>				
	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Notional equity (A)	0.00	0.00	6.00	6.00	6.00
Addition due to Additional Capitalization (after cut of date) (B)	0.00	6.00	0.00	0.00	0.00
Repayment of Equity (balance of depreciation after repayment of loan) (C)	0.00	0.00	0.00	0.00	0.00
Closing Equity (D) = (A +B–C)	0.00	6.00	6.00	6.00	6.00
Average Equity (E) = [(A+D)/2]	0.00	3.00	6.00	6.00	6.00
Weighted average rate of interest on actual loan portfolio (F)	7.94%	7.94%	7.94%	7.94%	7.94%
Return on Equity (G) = (E x F)	0.00	0.24	0.48	0.48	0.48

Interest on loan

34. Regulation 32 of the 2019 Tariff Regulations provide 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-capitalisation 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 loans shall be reflected from the date of such re-financing.”

35. The salient features of computation of interest on loan are summarized as follows:

a) The gross normative loan amounting to Rs.6452.95 lakh has been considered as on 1.4.2019.

b) Cumulative repayment amounting to Rs.5994.97 lakh as on 31.3.2019 as considered by order dated 25.3.2022 in Petition No.372/GT/2019 has been considered as on 1.4.2019.

c) The repayment for the year of the 2019-24 tariff period has been considered equal to the depreciation allowed for that year.

d) Interest on loan has been calculated on the normative average loan of the year by applying the weighted average rate of interest as claimed by the Petitioner.

36. Accordingly, Interest on loan has been worked out as follows:

	<i>(Rs. in lakh)</i>				
	2019-20	2020-21	2021-22	2022-23	2023-24
Gross opening loan (A)	6452.95	6463.76	6592.00	7207.88	7229.02
Cumulative repayment of loan up to previous year (B)	5994.97	6078.72	6109.93	5971.89	6110.65
Net Loan Opening (C)=[(A)-(B)]	457.98	385.05	482.07	1235.99	1118.38
Repayment during the year (D)	92.07	96.09	119.38	149.26	150.85
Cumulative repayment adjustment on a/c of de-capitalization (E)	8.32	64.88	257.43	10.50	7.19
Net Repayment (F)=[(D)-(E)]	83.75	31.21	(-)138.04	138.76	143.66
Addition due to additional capital expenditure (G)	10.81	128.23	615.88	21.15	15.27



	2019-20	2020-21	2021-22	2022-23	2023-24
Net Loan Closing (H)= (C+G-F)	385.05	482.07	1235.99	1118.38	989.98
Average Loan(I)=[(C+H)/2]	421.52	433.56	859.03	1177.18	1054.18
Weighted Average Rate of Interest of loan (J)	7.94%	7.94%	7.94%	7.94%	7.94%
Interest on Loan (K)=(I*J)	33.47	34.42	68.21	93.47	83.70

Depreciation

37. Regulation 33 of the 2019 Tariff Regulations provides that:

“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.”

38. Cumulative depreciation amounting to Rs.5972.45 lakh as on 31.3.2019 as allowed during truing up exercise for the 2014-19 tariff period, has been considered for the purpose of tariff. In terms of the 2014 Tariff Regulations, the useful life of the hydro generating station is 35 years. The expired life of the generating station till 31.3.2019 is 14.68 years and the balance useful life of the generating station, as on 31.3.2019, is 20.32 years. However, in contrast to the 2014 Tariff Regulations, the 2019 Tariff Regulations stipulates the useful life of the hydro generating station as 40 years. Accordingly, the balance useful life of the generating station as on 1.4.2019 has been considered at 25.32 years, in line with the 2019 Tariff Regulations. It is to be noted that the COD of the generating station is 26.7.2004. Since the generating station has completed 12 years of commercial operation during the year 2016-17, as such, to



calculate depreciation in the 2019-24 tariff period, the depreciable value has been spread over the balance useful life of the generating station. Accordingly, depreciation has been worked out and allowed as follows:

	(Rs. in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Gross block (A)	9218.50	9233.94	9417.13	10296.96	10327.17
Net Additional capital expenditure (B)	15.44	183.19	879.82	30.21	21.81
Closing gross block (C)=(A+B)	9233.94	9417.13	10296.96	10327.17	10348.98
Average gross block (D)=[(A+C)/2]	9226.22	9325.54	9857.04	10312.06	10338.07
Depreciable Value (E)=(D*90%)	8303.60	8392.98	8871.34	9280.86	9304.27
Remaining Depreciable Value at the beginning of the year (F)=(E - Cumulative Depreciation at 'L' at the end of previous year)	2331.15	2336.79	2783.93	3331.49	3216.14
Rate of Depreciation (G) = [(I)/(D)*100]	0.998%	1.030%	1.211%	1.447%	1.459%
Balance useful life (H)	25.32	24.32	23.32	22.32	21.32
Depreciation (I)=(F/H)	92.07	96.09	119.38	149.26	150.85
Cumulative Depreciation at the end of the year (J)=(I + Cumulative Depreciation at 'L' at the end of previous year)	6064.52	6152.28	6206.79	6098.63	6238.98
Less: Depreciation adjustment on account of de-capitalization (K)	8.32	64.88	257.43	10.50	7.19
Cumulative Depreciation at the end of the year (L)	6056.20	6087.41	5949.37	6088.13	6231.79

O&M Expenses

39. Regulation 35(2)(a) of the 2019 Tariff Regulations provides for O&M expenses for this generating station as under:

*“34(3) Following operations and maintenance expense norms shall be applicable for hydro generating stations which have been operational for three or more years as on 1.4.2019:
(Rs. in lakh)*

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-
Kopili-II	1,130.56	1,184.45	1,240.90	1,300.05	1,362.02

Note: The impact in respect of revision of minimum wage and GST, if any, will be considered at the time of determination of tariff.”

40. The Petitioner has submitted that the O&M expenses for the 2019-24 tariff period has



been claimed in terms of Regulation 35(2)(a) of the 2019 Tariff Regulations. Accordingly, the Petitioner's claim for normative O&M expenses, in terms of the above regulation is allowed.

Security Expenses

41. The Petitioner has submitted that Security expenses in terms of Regulation 35(2)(c) of 2019 Tariff Regulations shall be claimed at the time of truing up of tariff. Hence, the same has not been considered in this order.

Interest on working capital

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

*“34. Interest on Working Capital: (1) The working capital shall cover:
(c) For Hydro generating station (Including Pumped Storage Hydro Generating Station) and transmission system:
(i) Receivables equivalent to 45 days of annual fixed cost;
(ii) Maintenance spares @15% of operation and maintenance expense including security expenses; and
(iii) Operation and maintenance expenses including security expenses for one month”*

43. As regards the rate of interest on working capital, Regulation 34 (3) of the 2019 Tariff Regulations provides as follows:

“34(3) Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2014 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.”

Working Capital for Maintenance Spares

44. Maintenance spares have been worked out on the basis of 15% of O&M expenses



as follows:

<i>(Rs. in lakh)</i>				
2019-20	2020-21	2021-22	2022-23	2023-24
169.58	177.67	186.14	195.01	204.30

Working Capital for Receivables

45. Receivable component of the working capital has been worked out on the basis of 45 days of fixed cost as follows:

<i>(Rs. in lakh)</i>				
2019-20	2020-21	2021-22	2022-23	2023-24
229.79	238.17	255.98	273.84	280.17

Working capital O&M expenses

46. O&M expenses for one month, including security expenses, allowed for the purpose of working capital is as follows:

<i>(Rs. in lakh)</i>				
2019-20	2020-21	2021-22	2022-23	2023-24
94.21	98.70	103.41	108.34	113.50

47. In accordance with Regulation 34(3) of the 2019 Tariff Regulations, the rate of interest on working capital considered on projection basis, for the 2019-24 tariff period is 12.05% (i.e. 1-year SBI MCLR of 8.55% as on 1.4.2019 + 350 basis points). As the tariff of the generating station for 2019-24 tariff period is being determined during the year 2021-22, the SBI MCLR as on 1.4.2020 (7.75%) and as on 1.4.2021(7.00%) is also available which is lower in comparison of the same, as on 1.4.2019 (8.55%). Since the rate of interest on working capital is subject to revision at the time of truing-up of tariff, based on the bank rate as on 1st April of each financial year, we find it prudent to allow the rate of interest as on 1.4.2020 and 1.4.2021, for the subsequent financial years. Accordingly, the rate of interest for the year 2019-20 is 12.05%, 2020-21 is 11.25%



and for the subsequent years the rate of interest of 10.50% has been considered (i.e. 1-year SBI MCLR of 7.75% as on 1.4.2020 + 350 basis points and 1 year SBI MCLR of 7.00% as on 1.4.2021 + 350 basis points).

48. Accordingly, Interest on working capital is allowed as follows:

	<i>(Rs. in lakh)</i>				
	2019-20	2020-21	2021-22	2022-23	2023-24
Working capital for O & M expenses (1 month)	94.21	98.70	103.41	108.34	113.50
Working capital for Maintenance Spares	169.58	177.67	186.14	195.01	204.30
Working capital for Receivables	229.79	238.17	255.98	273.84	280.17
Total Working Capital	493.59	514.54	545.52	577.19	597.97
Rate of Interest	12.05%	11.25%	10.50%	10.50%	10.50%
Total Interest on Working capital	59.48	57.89	57.28	60.60	62.79

Annual Fixed Charges

49. Based on the above, the annual fixed charges approved for the 2019-24 tariff period in respect of the generating station are summarized as follows:

	<i>(Rs. in lakh)</i>				
	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	92.07	96.09	119.38	149.26	150.85
Interest on Loan	33.47	34.42	68.21	93.47	83.70
Return on Equity	553.38	558.97	590.49	617.78	619.34
O&M Expenses	59.48	57.89	57.28	60.60	62.79
Interest on Working Capital	1130.56	1184.45	1240.90	1300.05	1362.02
Total	1868.95	1931.82	2076.26	2221.17	2278.71

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



Normative Annual Plant Availability Factor (NAPAF)

51. Clause (4) of Regulation 50(A) of the 2019 Tariff Regulations provides for the NAPAF for hydro generating stations already in operation. Accordingly, NAPAF of 69% has been considered for this generating station.

Design Energy

52. The Commission in its order dated 25.3.2022 in Petition No.372/GT/2019 had approved the annual Design Energy (DE) of 86.30 Million units (MUs) for the period 2014-19 in respect of this generating station. As such, the approved DE of 86.30 Mus has been considered for this generating station for 2019-24 tariff period as per month-wise details as under:

Month	Design Energy (MUs)
April	0.72
May	14.88
June	17.28
July	18.60
August	18.60
September	15.95
October	0.27
November	0.00
December	0.00
January	0.00
February	0.00
March	0.00
Total	86.30

Application Fee and Publication Expenses

53. The Petitioner has sought the reimbursement of filing fee and also the expenses incurred towards publication of notices for application of tariff for the 2019-24 tariff period. The Petitioner has, submitted that reimbursement towards filing fees and publication expenses are in accordance in terms of the Regulation 70(1) of the



2019 Tariff Regulations. In view of the above, 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.

Summary

54. The summary of the annual fixed charges claimed in the present petition and the annual fixed charges allowed for the 2019-24 tariff period, are summarized below:

	<i>(Rs. in lakh)</i>				
	2019-20	2020-21	2021-22	2022-23	2023-24
Annual fixed charges claimed	1873.71	1957.97	2122.00	2265.72	2342.18
Annual fixed charges allowed in this order	1868.95	1931.82	2076.26	2221.17	2278.71

55. Petition No.235/GT/2020 is disposed of in terms of the above.

Sd/-
(Pravas Kumar Singh)
Member

Sd/-
(Arun Goyal)
Member

Sd/-
(P. K. Pujari)
Chairperson

