

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 232/GT/2020

Coram:

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

Date of Order: 11th May, 2022

In the matter of

Petition for approval of tariff of Doyang Hydroelectric Project (75 MW) of NEEPCO Ltd for the period from 1.4.2019 to 31.3.2024

And

In the matter of

North Eastern Electric Power Corporation Limited,
Corporate Office: Brookland Compound, Lower New Colony,
Shillong-793003

.... Petitioner

Vs

1. Assam Power Distribution Company Limited,
"Bijulee Bhawan" Paltanbazar,
Guwahati-781001, Assam
2. Meghalaya Power Distribution Corporation Limited,
Lumjinshai, Short Round Road,
Shillong-799001, Meghalaya
3. Tripura State Electricity Corporation Limited,
Bidyut Bhavan, North Banamalipur,
Agartala-799001, Tripura
4. Power & Electricity Department,
Government of Mizoram, New Secretariat Complex,
Kawlpetha, Aizwal-796001
5. Manipur State Power Distribution Company Limited,
3rdFloor, New Directorate Building, Near 2nd M.R. Gate,
Imphal-Dimapur Road, Imphal-795001, Manipur
6. Department of Power,
Government of Arunachal Pradesh,
Vidyut Bhawan, Itanagar-791111



7. Department of Power,
Government of Nagaland ,
Electricity House, AG Colony,
Kohima-797001
8. North Eastern Regional Power Committee,
NERPC Complex, Dong Parmaw, Lapalang,
Shillong-793006
9. North Eastern Regional Load Despatch Centre,
Dongtieh, Lower Nongrah, Lapalang,
Shillong-793006

.....Respondents

Parties Present:

Shri Devapriya Choudhury, NEEPCO
Shri Prabal Mukhopadhaya, NEEPCO
Ms. Elizabeth Pyrbot, NEEPCO

ORDER

This petition has been filed by the Petitioner, NEEPCO, for approval of tariff of Doyang Hydroelectric Project (3 x 25 MW) (hereinafter referred to as “the generating station”) for the period for the 2019-24 tariff period in accordance with the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 (hereinafter referred to as 'the 2019 Tariff Regulations').

Background

2. The project comprises of three units of 25 MW capacity each and is a run of the river scheme with pondage having a Head Race Tunnel and a surface Powerhouse with a corresponding reservoir. The date of commercial operation of the units/station is as under:

Units	Actual COD
I	29.6.2000
II	5.7.2000
III / Generating Station	8.7.2000

3. Petition No. 43/GT/2015 was filed by the Petitioner for approval of tariff of the generating station for the 2014-19 tariff period and the Commission vide its order



dated 13.1.2016 approved the annual fixed charges of the generating station. Subsequently, by corrigendum order dated 7.3.2016 in the said Petition No. 43/GT/2015, the annual fixed charges approved vide order dated 13.1.2016 were revised, after applying the effective tax rate applicable for the year 2014-15 for all the years for the 2014-19 tariff period. Thereafter, in Petition No.293/GT/2019 filed by the Petitioner for truing-up of tariff of the generating station for the 2014-19 tariff period, the Commission vide its order dated 31.3.2022 approved the annual fixed charges and the capital cost of the generating station, as under:

Annual Fixed Charges allowed

	<i>(Rs.in lakh)</i>				
	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	1127.43	1157.62	1180.24	1184.82	1182.64
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	4114.65	4445.28	5054.73	4550.57	4199.17
O&M Expenses	3900.10	4159.22	4435.56	4730.26	5044.54
Interest on Working Capital	336.11	358.73	388.55	393.33	402.55
Total	9478.29	10120.85	11059.07	10858.97	10828.90

Capital Cost allowed

	<i>(Rs.in lakh)</i>				
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	63806.14	63985.70	64848.77	64894.14	64897.29
Additional Capitalization allowed	179.56	863.07	45.37	3.15	(-) 128.94
Closing Capital Cost	63985.70	64848.77	64894.14	64897.29	64768.35
Average Capital Cost	63895.92	64417.24	64871.46	64895.71	64832.82

Present Petition

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



Capital Cost claimed

	<i>(Rs.in lakh)</i>				
	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Capital Cost	65302.87	66127.87	67159.21	68024.29	68184.29
Add: Addition during the year/period	825.00	1075.00	900.00	160.00	50.00
Less: De-capitalization during the year/ period	0.00	43.66	34.93	0.00	0.00
Less: Reversal during the year/ period	0.00	0.00	0.00	0.00	0.00
Add: Discharges during the year/ period	0.00	0.00	0.00	0.00	0.00
Closing Capital Cost	66127.87	67159.21	68024.29	68184.29	68234.29
Average Capital Cost	65715.37	66643.54	67591.75	68104.29	68209.29

Annual Fixed Charges claimed

	<i>(Rs.in lakh)</i>				
	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	1226.53	956.36	997.41	1051.50	1100.27
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	4043.53	4077.27	4111.74	4130.37	4134.19
Interest on Working Capital	363.14	348.04	338.09	352.94	368.19
O&M Expenses	5654.57	5924.10	6206.47	6502.31	6812.24
Total	11287.77	11305.77	11653.71	12037.12	12414.89

5. The Respondent No. 1, APDCL has filed its reply vide affidavit dated 29.6.2021 and the Petitioner vide affidavit dated 19.7.2021 has filed its rejoinder to the said reply. Thereafter, this Petition was heard on 27.7.2021 through virtual conferencing and the Commission, after hearing the parties, reserved its order in the matter. Taking into consideration the submissions of the parties and the documents available on record, we proceed to determine the tariff of the generating station for the 2019-24 tariff period, on prudence check, as stated in the subsequent paragraphs.

Capital Cost

6. Regulation 19(3) of the 2019 Tariff Regulations provides as under:

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

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



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

7. The Petitioner in its original petition has claimed the opening capital cost of Rs.74586.70 lakh as on 1.4.2019. This was revised by the Petitioner to Rs.65302.87 lakh vide affidavit dated 19.7.2021. However, the Commission vide its order dated 31.3.2022 in Petition No. 293/GT/2019 had approved the closing capital cost of Rs.64768.35 lakh, on cash basis, as on 31.3.2019. Accordingly, in terms of Regulation 19(3) of the 2019 Tariff Regulations, the closing capital cost of Rs.64768.35 lakh, on cash basis, has been considered as the opening capital cost as on 1.4.2019.

Additional Capital Expenditure

8. Clauses (1) and (2) of Regulation 25 and clause (1) of Regulation 26 of the 2019 Tariff Regulations, provides as under:

- “25. Additional Capitalisation within the original scope and after the cut-off date:*
- (1) The additional capital expenditure incurred or projected to be incurred in respect of an existing project or a new project on the following counts within the original scope of work and after the cut-off date may be admitted by the Commission, subject to prudence check:*
- (a) Liabilities to meet award of arbitration or for compliance of the directions or order of any statutory authority, or order or decree of any court of law;*
 - (b) Change in law or compliance of any existing law.*
 - (c) Deferred works relating to ash pond or ash handling system in the original scope of work;*
 - (d) Liability for works executed prior to the cut-off date;*



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

26. Additional Capitalisation beyond the original scope

- (1) The capital expenditure, in respect of existing generating station or the transmission system including communication system, incurred or projected to be incurred on the following counts beyond the original scope, may be admitted by the Commission, subject to prudence check:
- (a) Liabilities to meet award of arbitration or for compliance of order or directions of any statutory authority, or order or decree of any court of law;
- (b) Change in law or compliance of any existing law;
- (c) Force Majeure events.
- (d) Need for higher security and safety of the plant as advised or directed by appropriate Indian Government Instrumentality or statutory authorities responsible for national or internal security.
- (e) Deferred works relating to ash pond or ash handling system in additional to the original scope of work, on case-to-case basis:
Provided also that if any expenditure has been claimed under Renovation and Modernisation (R&M) or repairs and maintenance under O&M expenses, the same shall not be claimed under this Regulation.
- (f) Usage of water from sewage treatment plant in thermal generating station. xxxx”

9. The year-wise break-up of the projected additional capital expenditure (including discharges of liabilities) claimed by the Petitioner for the 2019-24 tariff period is as under:

	(Rs.in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
Additions during the year/period	825.00	1075.00	900.00	160.00	50.00
Less: De-capitalization during the year/ period	0.00	43.66	34.93	0.00	0.00
Less: Reversal during the year/ period	0.00	0.00	0.00	0.00	0.00



Add: Discharges during the year/ period	0.00	0.00	0.00	0.00	0.00
Net additional capital expenditure claimed (on projected basis)	825.00	1031.34	865.07	160.00	50.00

10. The projected additional capitalisation claimed by the Petitioner can be categorised as (i) Additional capital expenditure in respect of works already approved by Commission but which are continued/ spilled over from the 2014-19 tariff period; and (ii) additional capital expenditure for new items. We now proceed to deal with the additional capital expenditure claimed in the following paragraphs.

(A) Spill Over Works-Admitted works

11. The Petitioner has claimed projected additional capital expenditure on account of assets/works which have been spilled over as follows:

<i>(Rs.in lakh)</i>				
SI. No.	Works/ Items	Amount Claimed	Regulation	Justification submitted by the Petitioner
2019-20				
1.	Plant & Machinery in Generation Station: Up-gradation of Electromechanical relays to numerical relays & EM energy meters to ABT Compliant digital meters	250.00	26(1)(d)	Provision for retrofitting of numerical relay, and ABT based Energy meter was already approved for additional capitalization during the 2014-19 tariff period for Rs. 250.00 lakh. The work has been carried over to the 2019-24 period and will be completed by 2019-20. Drawings have been finalized and detailed order for supply, installation, retrofitting, testing and commissioning has been issued. The delivery of materials at site is expected by first week of September 2019. The commencement of work, retrofitting, installation and commissioning of numerical relay is likely to start by the last week of September, 2019.
2.	Fire-Fighting Equipment: Replacement of CO2 Fire fighting system of 3 Numbers Generator	50.00	25(1)(d)	Provision for replacement of CO ₂ firefighting system for three generators were approved as additional capital expenditure for the 2014-19 tariff period for Rs.50.00 lakh. The work has been carried over to the 2019-24 tariff period and shall be taken up in 2019-20. Initially the OEM M/s Technico, Kolkata was approached for replacement of CO ₂ Fire Fighting



Sl. No.	Works/ Items	Amount Claimed	Regulation	Justification submitted by the Petitioner
				system for 3 (three) nos. Generators. Although they had deputed their representative to Plant site, later on M/s Technico did not respond and as such the tender process is being initiated.
3.	Fire Fighting Equipment: Procurement of Fire Tender 4500 litres.	40.00	26(1)(d)	Provision for procurement of fire tender of 4500 litres. The additional capital expenditure was approved for this item during the 2014-19 tariff period for Rs.40.00 lakh and the work has been carried over to the 2019-24 tariff period. Tender was floated from HQ for procurement of Fire Tender for the generating station along with Fire Tenders for Kameng HEP and Pare HEP. The replacement of this asset was allowed under Regulation 14(3)(viii) of the 2014 tariff regulations on the ground that the asset will facilitate successful and efficient operation of plant.
2020-21				
4.	Water supply; sewerage & drain: Installation of Permanent water source for the use of the colonies and installation of Water purification scheme	400.00	26(1)(d)	Since the commissioning of the plant, there is no proper/permanent water supply scheme for providing potable water to the employees of the generating station. Presently, the water supply is tapped from a reservoir from un-acquired land. Besides there is no filtration scheme for purification of the raw water thereby the quality of the water tends to fall during heavy rains due to high turbidity and silt content. The proposed Installation of permanent water source and installation of water purification scheme was approved by the Commission under additional capital expenditure during the 2014-19 tariff period. However due to land dispute during site selection for the source, the design and drawing could not be finalized. Upon finalization of design, the estimate has been framed. The proposal is in tendering stage at HQ C&P cell Shillong, and is proposed to be executed.

12. It is evident from the above that the assets/ works in Sl. No. 1 to Sl. No. 4 above, were allowed by the Commission vide order dated 13.1.2016 in Petition



No.43/GT/2015 under Regulation 14(3)(viii) of 2014 Tariff Regulations. The Petitioner has pointed out that these items could not be completed within the 2014-19 tariff period for reasons as mentioned therein. It has, however, submitted that purchase orders for all these assets/works have been placed and the same will be completed during the 2019-24 tariff period. It is noticed from records that that the Commission vide its order dated 13.1.2016 in Petition No. 43/GT/2015 had allowed these assets/works under Regulation 14(3)(viii) of the 2014 Tariff Regulations, on the ground that these assets/works were required for efficient operation of the plant. In view of this, and since these assets/works are spill over works which are in progress and expected to be completed during the 2019-24 tariff period, we allow additional capitalisation of the same, in exercise of the power to relax, under Regulation 76 of the 2019 Tariff Regulations. Accordingly, the projected additional capital expenditure Rs.740 lakh claimed by the Petitioner is allowed.

(B) New Claims

2019-20

13. The admissibility of the projected additional capital expenditure claimed by the Petitioner and allowed in 2019-20, based on the prudence check of the justification furnished by the Petitioner are as under:

(Rs.in lakh)

Works/ Items	Amount claimed	Regulation	Justification by the Petitioner	Admissibility	Amount allowed
Transformer having rating 100 KVA & above: Procurement of 1(one) number new 28.5 MVA, 11/132 kV Generator Transformer	350.00	26(1)(d)	In order to avoid prolonged forced outages of Units and subsequent loss of generation and financial loss due to failure of Generator Transformers (GT), a new spare Generator Transformer is very much essential. Doyang GT of Unit-II has been repaired four times,	The Petitioner has submitted that the projected additional capital expenditure claimed under this head is towards procurement of the Spare generator transformer. Since the projected additional capital expenditure claimed is in the nature	0.00



Works/ Items	Amount claimed	Regulation	Justification by the Petitioner	Admissibility	Amount allowed
			as such next failure also cannot be ruled out. The OEM of the GTs in DHEP i.e. M/S Bharat Bijlee Limited has recommended for procurement of a new GT instead of repeated repairing of GT of Unit II. In order to replace the repaired GT of Unit II, procurement of a new GT of the same capacity has already been initiated through open tender process.	of capital spares and since capital spares after the cut-off date, are not allowed, the claim of the Petitioner is not allowed	
Plant & Machinery in Generation Station: De-watering and Drainage pump sets including control panels with automatic level controller	60.00	26(1)(d)	Ageing and prolonged use of the existing drainage and dewatering pump motor sets has led to their wear and tear and of late these pump motor sets are giving frequent problems necessitating repeated repairs. As such the dewatering and drainage pump motor sets need to be replaced at the earliest in order to avoid flooding of Powerhouse and loss of generation in the event of failure of the existing Dewatering and Drainage motor pump sets. It is proposed to procure new pumps sets of same type and capacity at the earliest.	The Petitioner has submitted that the projected additional capital expenditure claimed under this head is on account of replacement of existing drainage pump sets, to avoid the flooding of the powerhouse. It is observed from the Petitioner's submission that the expenditure claimed for assets under this head, are on replacement basis. In view of this, the additional capital expenditure claimed is allowed on replacement basis, under the Regulation 25(2)(c) of the 2019 Tariff Regulations.	60.00
Switchyard including cable connection: Procurement of Current Transformers (CTs) with CTR 600/1 to replace the existing CTs of CTR	75.00	26(1)(d)	As discussed in the OCC meeting and agreed by all constituents, and an important requirement for grid stability, upgradation of CTs is required to be done in order to increase power flow and to maintain grid stability. The existing CTs of CTR 300/1 of outgoing feeders and Bus coupler	The Petitioner has submitted that the projected additional capital expenditure claimed under this head is on account of upgradation of existing Current Transformers to increase the power flow and grid stability. It is observed from the Petitioner's submission	75.00



Works/ Items	Amount claimed	Regulation	Justification by the Petitioner	Admissibility	Amount allowed
300/1 in the outgoing feeders, bus coupler in the 132kV Switchyard, DHEP. Total CTs required to be procured with CTR 600/1 including 3 nos. spare CTs will be 18 (eighteen) numbers only.			are to be replaced with CTs of CTR 600/1.	that the expenditure claimed for assets under this head, are on replacement basis. In view of this, the additional capital expenditure claimed is allowed on replacement basis, under the Regulation 25(2)(c) of the 2019 Tariff Regulations.	
Total amount claimed	825.00				
Total amount allowed					135.00

2020-21

14. The admissibility of the projected additional capital expenditure claimed by the Petitioner and allowed in 2020-21, on prudence check of the justification furnished by the Petitioner, are as under:

(Rs.in lakh)

Works/ Items	Amount claimed	Regulation	Justification by the Petitioner	Admissibility	Amount allowed
Plant & Machinery in Generation Station: Cooling water pipe line replacement with SS pipes	100.00	26(1)(d)	The condition of the existing MS pipes in the Powerhouse is in a deplorable condition and need to be replaced as the MS pipes have outlived their life. It may be noted that the state of Nagaland has coal deposits in the upstream side of the dam and due to sulphation, the cooling water is likely to be affected leading to corrosion of MS pipes in	The Petitioner has submitted that the projected additional capital expenditure claimed under this head is on account of replacement of the existing MS pipes with new ones. . In view of this, the additional capital expenditure claimed is allowed on replacement basis, under the Regulation 25(2)(c) of the 2019	100.00



Works/ Items	Amount claimed	Regulation	Justification by the Petitioner	Admissibility	Amount allowed
			the Powerhouse and outage of machines. In order to prevent outage due to cooling water pipeline failure, the MS pipe lines in the Power House are proposed to be replaced with SS pipe lines as adopted at Kopili and Khandong Power House.	Tariff Regulations.	
Plant & Machinery in Generation Station: Pre-loaded spring mattress for thrust bearings to be replaced for all 3(three) units.	150.00	26(1)(d)	It has been observed that the rotor dynamic level has been affected due to losing spring tension of spring mattresses thereby affecting the properties of pre-loaded spring mattress for thrust bearing. Rotor dynamic levelling going out of prescribed value will affect the performance of Guide bearing, balancing of machine etc. In order to safe guard the machines from any mechanical abnormality, and to increase the efficiency of the machines, it is required to replace the complete set of thrust bearing pre-loaded spring mattress in all three units.	The Petitioner has submitted that the projected additional capital expenditure claimed under this head is on account of replacement of thrust bearings to safeguard the machine from any mechanical abnormality. It is observed from the Petitioner's submission that the expenditure claimed for assets under this head, are on replacement basis. In view of this, the additional capital expenditure claimed is allowed on replacement basis, under the Regulation 25(2)(c) of the 2019 Tariff Regulations.	150.00
T&P(special): Procurement of new turbine oil filtration unit	15.00	26(1)(d)	The existing turbine oil filtration machine is more than 20(twenty) years old and it frequently breaks down hampering the functioning of machines due to guide bearing problem. In order to avoid down time and prevent forced outage of the machine, procurement of a new turbine oil filter machine for replacing the old one	The Petitioner has submitted that the projected additional capital expenditure under this head is on account of replacement of oil filtration unit to avoid down time and prevent forced outage. In view of this, the additional capital expenditure claimed is allowed on replacement basis,	15.00



Works/ Items	Amount claimed	Regulation	Justification by the Petitioner	Admissibility	Amount allowed
			is necessary.	under the Regulation 25(2)(c) of the 2019 Tariff Regulations.	
Plant & Machinery in Generation Station: Disaster Management pumping system in case of flooding of Powerhouse.	50.00	26(1)(d)	2 (two) nos. of 30 HP pumps of 4000 lpm discharge each are to be installed in the runner gallery to enable pumping out of water in the event of flooding of Powerhouse.	The Petitioner has submitted that the projected additional capital expenditure under this head is towards procurement of the pumps to protect the plant from flooding. However, the Petitioner has not submitted any documentary evidence indicating that the claim for this asset is based on advice from Government of India instrumentality or statutory agencies responsible. In view of this, the projected additional capital expenditure claimed under this head is not allowed . The Petitioner, may, at the time of truing up of tariff claim the expenditure with proper documentary evidence and in terms of the relevant provisions of the 2019 Tariff Regulations	00.00
Plant & Machinery in Generation Station: Requirement of new 220V DC battery bank-II	80.00	26(1)(d)	For 100% redundancy and as recommended by protection team and as per the CEA guide lines, an alternative DC source i.e. DC source II is a must. In the event of failure of DC control circuit, the whole DC control system will fail and will lead to catastrophic shutdown of the machines. As such requirement of 220 V DC Bank II is required.	The Petitioner has submitted that the projected additional capital expenditure claimed under this head is on account of replacement existing battery bank to achieve 100% redundancy as per CEA guidelines. It is observed from the Petitioner's submission that the expenditure claimed for assets under this head, are on replacement basis. In	80.00



Works/ Items	Amount claimed	Regulation	Justification by the Petitioner	Admissibility	Amount allowed
				view of this, the additional capital expenditure claimed is allowed on replacement basis, under the Regulation 25(2)(c) of the 2019 Tariff Regulations.	
Dam/Reservoir/Spillway: Study of siltation of Doyang Reservoir	30.00	26(1)(d)	It is observed that huge quantity of silt deposits is being accumulated in the Doyang reservoir, due to which the storage capacity of the reservoir is decreasing day by day which will affect the generation output of the plant. Project Authority hereby proposes for siltation study of the reservoir.	It is observed that the study of siltation of Doyang Reservoir do not relate to the higher safety & security of the plant. Accordingly, the additional capital expenditure claimed for this asset/work is not allowed .	0.00
Dam/Reservoir/Spillway: Protective measures to reduce Siltation	50.00	26(1)(d)	After completion of the study of Reservoir siltation, Protective measures like construction of Check dams, Gully plugging etc. shall be taken up in the tributaries of Doyang river, Prone landslide zones of the Catchment area to avoid further siltation in the reservoir.	It is observed that the projected additional capital expenditure claimed in respect of the said asset/work, is recurring in nature and hence, the Petitioner may bear the same from the normative O&M expenses allowed to the generating station. Accordingly, the projected additional capital expenditure claimed under this head is not allowed .	0.00
Pmt. Roads: Improvement of colony road: Phase I	200.00	26(1)(d)	Since commissioning of the plant, no major upgradation/ maintenance works of Roads were taken up. The project is linked by 12.41 km of internal roads which are in deplorable condition. Since the generating station is located in the remotest hilly terrain and due to its abnormal monsoon conditions,	It is observed from the submissions of the Petitioner that that the additional capital expenditure claimed for the said asset do not relate directly to the higher safety & security of the plant. Accordingly, the expenditure claimed is not allowed .	0.00



Works/ Items	Amount claimed	Regulation	Justification by the Petitioner	Admissibility	Amount allowed
			major portion of the road & drains have been badly damaged leading to undue hardship of the plant Engineers and workers. Moreover, in some portion existing culverts are damaged and in deplorable state. Due to the dilapidated condition of the road with presence of numerous potholes all along the stretch which poses threat to life of the commuters (employees)		
Total amount claimed	1075.00				
Total amount allowed					345.00

2021-22

15. The admissibility of the projected additional capital expenditure claimed by the Petitioner and allowed in 2021-22, on prudence check of the justification furnished by the Petitioner, are as under:

Works/ Items	Amount claimed	Regulation under which claimed	Justification by the Petitioner	(Rs.in lakh) Admissibility	Amount allowed
T&P(special): Online oil filter machine for bearing housing	70.00	26(1)(d)	The Online oil filtration system is required for bearing housing, where continuous oil filtration will be there, even during machine under standstill condition. This process will ensure the quality of oil and remove any micro particles from the oil, and through this system the machine performance, guide bearing performance, the quality of oil and its cooling effectiveness will be	The Petitioner has submitted that the projected additional capital expenditure claimed under this head is to ensure the quality of oil to enhance the performance of the machine. However, the Petitioner has not submitted any documentary evidence indicating that the claim for this asset is based on advice from any Technical	00.00



Works/ Items	Amount claimed	Regulation under which claimed	Justification by the Petitioner	Admissibility	Amount allowed
			ensured.	committee/Government of India instrumentality. In view of this, the projected additional capital expenditure claimed under this head is not allowed . The Petitioner, may, at the time of truing up of tariff claim the expenditure with proper documentary evidence and in terms of the relevant provisions of the 2019 Tariff Regulations	
Transformer having rating 100 KVA & above: DGA instruments to be incorporated online in all the 3(three) Generator Transformers	80.00	26(1)(d)	Failure of Generator Transformers is one of the severest failures in a Power Plant and has to be avoided at all costs. The incorporation of DGA (Dissolved Gas Analysis) will help in condition monitoring of GT round the clock. Basing on the data, the healthiness of Generator Transformers can be ascertained and forced outages reduced and reduced expenses in repairing of GT.	The Petitioner has submitted that the projected additional capital expenditure claimed under this head is for incorporation of dissolved gas analysis in GT. It is observed from the Petitioner's submission that the expenditure claimed for assets under this head, are on replacement basis. In view of this, the additional capital expenditure claimed is allowed on replacement basis, under the Regulation 25(2)(c) of the 2019 Tariff Regulations.	80.00
Plant & Machinery in Generation Station: Automation of machine complete implementation of SCADA	150.00	26(1)(d)	SCADA (Supervisory Control and Data Acquisition) system, machine automation and real time data to monitor the performance and stability of the system has become necessary and mandatory as per the regulation. In order to implement SCADA in totality, data from the field are to be acquired and processed	The Petitioner has submitted that the projected additional capital expenditure under this head is on account of implementation of SCADA, and machine automation. It is observed from the Petitioner's submission that the expenditure claimed for assets under this head, are on	150.00



Works/ Items	Amount claimed	Regulation under which claimed	Justification by the Petitioner	Admissibility	Amount allowed
			accordingly.	replacement basis. In view of this, the additional capital expenditure claimed is allowed on replacement basis, under the Regulation 25(2)(c) of the 2019 Tariff Regulations	
Plant & Machinery in Generation Station: Replacement of Unit control panel, temperature panel, recorder display of parameters	200.00	26(1)(d)	The existing unit control panel, temperature gauge panel is old and outdated. In order to meet the requirement of machine automation and SCADA system, the present panel needs to be replaced with the better and latest version of unit control panel and temperature gauge panel. From this control panel one should be able to initiate command for stopping and starting of machines.	The Petitioner has submitted that the projected additional capital expenditure claimed under this head is on account of replacement of unit control panel for SCADA. In view of this, the additional capital expenditure claimed is allowed on replacement basis, under the Regulation 25(2)(c) of the 2019 Tariff Regulations.	200.00
Powerhouse & Penstock: Replacement of Trash rack of Intake of the generating station.	200.00	26(1)(d)	Upon inspection of the trash rack of intake penstock, it has been observed that huge corrosion and rusting has occurred requiring immediate replacement. Due to exposure of the trash rack to air as well as silt/slush content in the Doyang river, there is fast corrosion and eroding of the metal parts. The Project was commissioned in 2000. However, the trash rack has not been replaced till date. It is necessary to keep the trash rack in good condition in order to avoid entry of debris into the penstock which leads to the turbine of the Powerhouse. As entry of unwanted debris	The Petitioner has submitted that the projected additional capital expenditure under this head is on account of replacement of trash rack of the generating station. In view of this, the additional capital expenditure claimed is allowed on replacement basis, under the Regulation 25(2)(c) of the 2019 Tariff Regulations.	200.00



Works/ Items	Amount claimed	Regulation under which claimed	Justification by the Petitioner	Admissibility	Amount allowed
			may damage the underwater parts like runner, the replacement of trash rack is proposed from Project Authority.		
Pmt. Roads: Improvement of colony road: Phase II	200.00	26(1)(d)	Since the commissioning of the plant, no major upgradation/ maintenance of roads were taken up. The project is linked by 12.41 km of internal roads which are in deplorable condition. Since the generating station is located in the remotest hilly terrain and due to its abnormal monsoon conditions, major portion of the road & drains have been badly damaged leading to undue hardship of the plant engineers and workers. Moreover, in some portion, the existing culverts are damaged and in deplorable state. Due to the dilapidated condition of the road with presence of numerous potholes, all along the stretch, poses threat to life of the commuters. For uninterrupted movement and to enhance productivity of the plant, timely movement of O&M engineers, workers, supply of spares etc., upgradation & strengthening of the road condition of the generating station is required.	It is observed that the said asset does not relate directly to the higher safety & security of the plant. Accordingly, the expenditure claimed is not allowed .	0.00
Total amount claimed	900.00				
Total amount allowed					630.00



2022-23

16. The admissibility of the projected additional capital expenditure claimed by the Petitioner and allowed in 2022-23, on prudence check of the justification furnished by the Petitioner are as under:

Works/ Items	Amount claimed	Regulation under which claimed	Justification by the Petitioner	(Rs.in lakh)	
				Admissibility	Amount allowed
Fire Fighting Equipment: Upgradation of firefighting system, hydrant system, deluge valves, solenoids, pipelines, motor panels.	60.00	26(1)(d)	The upgradation of firefighting system, the components like fire hydrants, deluge valves, solenoids, hydrant pipelines, motor control panels are to be upgraded to the latest system. The present existing system is more than 20 (twenty) years old, and many components of the system have started malfunctioning which may lead to major damage due to fire.	The Petitioner has submitted that the projected additional capital expenditure claimed under this head is on account of upgradation of firefighting system.. In view of this, the additional capital expenditure claimed is allowed on replacement basis, under the Regulation 25(2)(c) of the 2019 Tariff Regulations.	60.00
Pmt. Roads: Improvement of colony road: Phase III	100.00	26(1)(d)	Since the commissioning of the plant, no major upgradation/ maintenance of roads were taken up. The project is linked by 12.41 km of internal roads which are in deplorable condition. Since the generating station is located in the remotest hilly terrain and due to its abnormal monsoon conditions, major portion of the road & drains have been badly damaged leading to undue hardship of the plant engineers and workers. Moreover, in some portion, the existing culverts are damaged and in deplorable state. Due to the dilapidated	It is observed that the said asset does not relate directly to the higher safety & security of the plant. Accordingly, expenditure on account of the said asset is not allowed .	0.00



			condition of the road with presence of numerous potholes, all along the stretch, poses threat to life of the commuters. For uninterrupted movement and to enhance productivity of the plant, timely movement of O&M engineers, workers, supply of spares etc., upgradation & strengthening of the road condition of the generating station is required.		
Total amount claimed	160.00				
Total amount allowed					60.00

2023-24

17. The admissibility of the projected additional capital expenditure claimed by the Petitioner and allowed in 2023-24, on prudence check of the justification furnished by the Petitioner are as under:

<i>(Rs.in lakh)</i>					
Works/ Items	Amount claimed	Regulation under which claimed	Justification by the Petitioner	Admissibility	Amount allowed
Switchyard including cable connection: Sub-automation of Switchyard	50.00	26(1)(d)	In line with the SCADA system, sub automation of switchyard is required, whereby command from control room and remote should be able to operate Circuit Breaker, isolator, earth switch etc.	The Petitioner has submitted that the projected additional capital expenditure claimed under this head is required for implementation of SCADA. However, the Petitioner has not submitted any documentary evidence indicating that the claim for this asset is based on advice from Government of India instrumentality or statutory agencies responsible for national security. In view of this, the projected additional capital expenditure claimed under this head is	00.00



				not allowed. The Petitioner may, at the time of truing up of tariff claim the expenditure with proper documentary evidence and in terms of the relevant provisions of the 2019 Tariff Regulations.	
Total amount claimed	50.00				
Total amount allowed					00.00

18. Accordingly, the total additional capital expenditure of Rs.1170.00 lakh is allowed as above in respect of new assets/ works within the original scope of work of the project.

19. Based on the above, the total additional capital expenditure allowed is as under:

	<i>(Rs.in lakh)</i>				
	2019-20	2020-21	2021-22	2022-23	2023-24
Total Additional Capital Expenditure allowed for Spill Over assets	340.00	400.00	0.00	0.00	0.00
Total Additional Capital Expenditure allowed for new items	135.00	345.00	630.00	60.00	0.00
Total	475.00	745.00	630.00	60.00	0.00

Decapitalization

20. The Petitioner has claimed de-capitalization as under:

	<i>(Rs.in lakh)</i>	
De-capitalization claimed	2020-21	2021-22
Cooling Water pipeline replacement with SS pipes	17.46	-
Pre-Loaded Spring mattress for Thrust bearing	26.19	-
Replacement of unit control panel, temperature panel and recorder display of parameters	-	34.93

21. It is noticed that the decapitalization amount of old assets considered by the Petitioner appears to be on lower side and hence, we are not inclined to consider the amount claimed as above. However, we have worked out the corresponding de-



capitalization under 'Assumed Deletions' for the aforesaid assets, as discussed below:

Assumed Deletions

22. 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 de-capitalization of the original value of the old asset. However, in certain cases where de-capitalization is affected in books during the following years, to the year of capitalization of 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 decapitalization which is not a book entry in the year of capitalization is termed as "Assumed deletion". Further, in the absence of the gross value of the asset being de-capitalized, the same is calculated by de-escalating the gross value of new asset @ 5% per annum till the year of capitalization of the old asset.

23. It is observed that the Petitioner has claimed the asset/work such as firefighting equipment, turbine oil filtration unit, control panel, trash rack, etc., on replacement basis. However, the Petitioner has not furnished the de-capitalization value of the old asset/works, which have been replaced. Accordingly, based on above methodology, the assumed deletion considered for these assets/works also, is as under:

(Rs.in lakh)

	Assets/Works	Additions claimed for new assets/works	Assumed Deletions for old assets/works	
			Claimed	Allowed
2019-20				
	Fire Fighting Equipment: Procurement of Fire Tender 4500 Litre.	40.00	0.00	15.83
	Dewatering and Drainage pump	60.00	0.00	23.74



	sets including control panels with automatic level controller			
	Switchyard including cable connection: Procurement of Current Transformers (CTs) with CTR 600/1 to replace the existing CTs of CTR 300/1 in the outgoing feeders, bus coupler in the 132kV Switchyard, DHEP. Total CTs required to be procured with CTR 600/1 including 3 nos. spare CTs will be 18 (eighteen) numbers only.	75.00	0.00	29.68
2020-21				
	T&P(special): Procurement of new turbine oil filtration unit	15.00	0.00	5.65
	Plant & Machinery in Generation Station: Pre-loaded spring mattress for thrust bearings to be replaced for all 3(three) units.	150.00	26.19	56.53
	Plant & Machinery in Generation Station: Cooling water pipe line replacement with SS pipes	100.00	17.46	37.69
	Plant & Machinery in Generation Station: Requirement of new 220V DC battery bank-II	80.00	0.00	30.15
2021-22				
	Transformer having rating 100 KVA & above: DGA instruments to be incorporated online in all the 3 (three) Generator Transformers	80.00	0.00	28.72
	Plant & Machinery in Generation Station: Replacement of Unit control panel, temperature panel, recorder display of parameters	200.00	34.93	71.79
	Powerhouse & Penstock: Replacement of Trash rack of Intake of Doyang HE Plant	200.00	0.00	71.79
2022-23				
	Upgradation of firefighting system, hydrant system, deluge valves, solenoids, pipelines, motor panels	60.00	0.00	20.51



Capital Cost allowed

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

	(Rs.in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Capital Cost	64768.35	65174.09	65789.07	66246.77	66286.26
Add: Projected additional capital expenditure allowed	475.00	745.00	630.00	60.00	00.00
Less: Assumed Deletions	69.25	130.03	172.29	20.51	0.00
Net additional capital expenditure	405.75	614.97	457.71	39.49	0.00
Closing Capital Cost	65174.09	65789.07	66246.77	66286.26	66286.26
Average Capital Cost	64971.22	65481.58	66017.92	66266.52	66286.26

Debt Equity Ratio

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

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

Provided that:

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

Explanation- The premium, if any, raised by the generating company or the transmission licensee, as the case may be, while issuing share capital and investment of internal resources created out of its free reserve, for the funding of the project, shall be reckoned as paid up capital for the purpose of computing return on equity, only if such premium amount and internal resources are actually utilised for meeting the capital expenditure of the generating station or the transmission system.

(2) The generating company or the transmission licensee, as the case may be, shall submit the resolution of the Board of the company or approval of the competent authority in other cases regarding infusion of funds from internal resources in support of the utilization made or proposed to be made to meet the capital expenditure of the generating station or the transmission system including communication system, as the case may be.

(3) In case of the generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2019, debt: equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2019 shall be considered:

Provided that in case of a generating station or a transmission system including communication system which has completed its useful life as on or after 1.4.2019, if the equity actually deployed as on 1.4.2019 is more than 30% of the capital cost, equity in excess of 30% shall not be taken into account for tariff computation;



Provided further that in case of projects owned by Damodar Valley Corporation, the debt: equity ratio shall be governed as per sub-clause (ii) of clause (2) of Regulation 72 of these regulations;

(4) In case of the generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2019, but where debt: equity ratio has not been determined by the Commission for determination of tariff for the period ending 31.3.2019, the Commission shall approve the debt: equity ratio in accordance with clause (1) of this Regulation.

(5) Any expenditure incurred or projected to be incurred on or after 1.4.2019 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernisation expenditure for life extension shall be serviced in the manner specified in clause (1) of this Regulation.”

26. The gross loan and equity amounting to Rs.31927.51 lakh and Rs.32840.84 lakh, respectively as on 31.3.2019, was considered in order dated 31.3.2022 in Petition No. 293/GT/2019. The proportionate equity as a percentage of admitted capital cost as on 31.3.2019 is 50.71%. Accordingly, the gross loan and equity amounting to Rs.31927.51 lakh and Rs.32840.84 lakh has been considered as opening gross loan and equity as on 1.4.2019. Further, the projected additional capital expenditure approved as above, has been claimed to be funded in the debt-equity ratio of 70:30. Since de-capitalization of assets has been considered on assumed deletion basis, considering the put to use year as CoD, the debt-equity ratio for de-capitalization has been considered as 48.78:51.22 as on CoD. The details of debt-equity ratio considered is shown as under:

Asset	<i>(Rs. in lakh)</i>							
	As on 1.4.2019		Additional Capital Expenditure during 2019-24		De-capitalization during 2019-24		As on 31.3.2024	
	Amount	%	Amount	%	Amount	%	Amount	%
Debt	31927.51	49.29	1337.00	70.00	191.26	48.78	33073.25	49.89%
Equity	32840.84	50.71	573.00	30.00	200.82	51.22	33213.02	50.11%
Total	64768.35	100.00	1910.00	100.00	392.08	100.00	66286.26	100.00

Return on Equity

27. 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”

28. 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 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 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."

29. The Commission, vide its order dated 31.3.2022 in Petition No. 293/GT/2019, pertaining to truing-up of tariff of this generating station for the 2014-19 tariff period, had observed as under:

39. Ministry of Power, GOI vide letter dated 13.3.2009 had approved the financial package of this project and according to this, "the tariff will be enhanced at the rate of 5 per cent during the tariff period five years beginning from 2009-2010. Thereafter, the tariff will so increase in the very first year of tariff period beginning from 2014-2015 to give return of 10 per cent on equity." This was recognised by the Commission in order dated 24.12.2012 in Petition No. 63/2010 for approval of tariff of the generating station for 2009-14 period.

30. For grossing up of Return on Equity (ROE) during the 2019-24 tariff period, the Petitioner has applied the MAT rate of 17.472% and the same is allowed. This is, however, subject to revision, if any, at the time of truing up of tariff. Accordingly, ROE has been worked out and allowed based on the admitted additional capital expenditure as under:



(Rs.in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Normative Equity - Opening (a)	32840.84	32947.87	33104.77	33205.52	33213.02
Addition of Equity due to additional capital expenditure (b)	142.50	223.50	189.00	18.00	0.00
Deletion of Equity due to de-capitalization (c)	35.47	66.60	88.25	10.51	0.00
Normative Equity- Closing (d)=[(a)+(b)-(c)]	32947.87	33104.77	33205.52	33213.02	33213.02
Average Normative Equity (e)=[(a+d)/2]	32894.35	33026.32	33155.15	33209.27	33213.02
Return on Equity (Base Rate) (f)	10.00%	10.00%	10.00%	10.00%	10.00%
Effective Tax Rate (g)	17.472%	17.472%	17.472%	17.472%	17.472%
Rate of Return on Equity (Pre-tax) (h)=[(f)/(1-(g))]	12.117%	12.117%	12.117%	12.117%	12.117%
Return on Equity (Pre-tax) – (annualized) (i)=[(e)*(h)]	3985.81	4001.80	4017.41	4023.97	4024.42

Interest on loan

31. 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-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.”



32. The normative loan for the project has already been repaid. The normative loan on account of the admitted additional capital expenditure during the respective years of the tariff period has been considered as paid fully, as the admitted depreciation is more than the amount of normative loan in these years. As such, the Interest on loan during the 2019-24 tariff period is 'nil'.

Depreciation

33. 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.

34. Depreciation has been worked out considering the admitted capital expenditure as on 31.3.2019 and accumulated depreciation of Rs. 38712.09 lakh up to 31.3.2019. Since the generating station has completed 12 years of operation in the year 2012-13, the remaining depreciable value has been spread over the balance useful life of the assets. Depreciation calculated in terms of the above regulation is allowed as under:

	(Rs.in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Capital Cost (a)	64768.35	65174.09	65789.07	66246.77	66286.26
Closing Capital Cost (b)	65174.09	65789.07	66246.77	66286.26	66286.26
Average Capital Cost (c)=[(a)+(b)/2]	64971.22	65481.58	66017.92	66266.52	66286.26
Rate of Depreciation (%) (d)=[(i)/(c)]	1.43%	1.45%	1.48%	1.49%	1.49%
Depreciable Value (e)=[90%*(c)]	58474.10	58933.42	59416.13	59639.87	59657.64
Balance life (f) **	21.27	20.27	19.27	18.27	17.27
Cumulative depreciation beginning (g)	38712.09	39641.22	40593.00	41569.84	42558.93
Remaining Depreciable Value (h) = [(e)-(g)]	19762.01	19292.21	18823.12	18070.02	17098.71
Depreciation during the period (i)=[(h)/(f)]	929.13	951.79	976.84	989.08	990.11
Cumulative depreciation (j)=[(g)+(i)]	39641.22	40593.00	41569.84	42558.93	43549.04
Less: Adjustment on account of de-capitalisation (k)*	0.00	0.00	0.00	0.00	0.00
Net Cumulative Depreciation (l)	39641.22	40593.00	41569.84	42558.93	43549.04

*No adjustment in depreciation on account of decapitalization has been considered at this stage and the same shall be considered at the time of truing up.

**As per regulation 3(73)(e) of 2019 Tariff Regulations, useful life is 40 years.



Operation & Maintenance Expenses

35. Regulation 35(2)(a) of the 2019 Tariff Regulations provides the O&M expense norms for hydro generating stations which have been operational for three or more years as on 1.4.2019, as shown below :

<i>(Rs. in lakh)</i>				
2019-20	2020-21	2021-22	2022-23	2023-24
5654.57	5924.10	6206.47	6502.31	6812.24

36. The normative O&M expenses as claimed by the Petitioner are in accordance with Regulation 35(2) of 2019 Tariff Regulations and is therefore allowed. The Petitioner has not claimed additional O&M expenses on account of the impact of revision of minimum wages, pay revision and GST.

37. Regulation 35(2)(d) of the 2019 Tariff Regulations provides as under:

“The Security Expenses and Capital Spares for hydro generating stations shall be allowed separately after prudence check:

Provided further that the generating station shall submit the assessment of the security requirement and estimated expenses, the details of year-wise actual capital spares consumed at the time of truing up with appropriate justification.”

Capital Spares

38. The Petitioner has submitted the details of Capital spares for the years 2019-20 and 2020-21. Since capital spares shall be allowed on actual consumption basis, the same shall be considered at the time of truing-up of tariff, based on the actual expenses incurred by the Petitioner and the submission of relevant details as per the said regulations.

Security Expenses

39. The Petitioner has also claimed Security expenses as part of O&M expenses in terms of Regulation 35(2)(d) of the 2019 Tariff Regulations. Further, the Petitioner has submitted that based on the actual security expenses incurred during 2018-19, the year-wise escalation rate of 4.77% has been considered to arrive at the security



expenses for the 2019-24 tariff period. Accordingly, the estimated security expenses claimed by the Petitioner are as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
1214.00	1278.00	1350.00	1455.00	1565.00

40. It is noticed that the actual security expenses incurred by the Petitioner for 2018-19 is Rs.1419.89 lakh (as submitted vide affidavit dated 7.9.2021 in Petition No 293/GT/2019) which is higher in comparison to the claim of the Petitioner in the present petition. Therefore, the claim of the Petitioner in this petition is considered and allowed, as tabulated below. This is however, subject to truing up, based on the actual expenses incurred:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
1214.00	1278.00	1350.00	1455.00	1565.00

Interest on Working Capital

41. Regulation 34(1)(c) of the 2019 Tariff Regulation provides as under:

“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 expenses including security expenses; and

(iii) Operation and maintenance expenses, including security expenses for one month.

42. Regulation 34(3) and Regulation 34(4) of the 2019 Tariff Regulations provide as under:

(3) Rate of interest on working capital shall be on normative basis and shall be considered as 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 as 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.”

Working Capital for Receivables

43. Receivables equivalent to 45 days of annual fixed cost are worked out and allowed as under:

<i>(Rs.in lakh)</i>				
2019-20	2020-21	2021-22	2022-23	2023-24
1494.68	1543.36	1590.77	1644.41	1693.63

Working Capital for Maintenance Spares

44. Maintenance spares @ 15% of O&M expenses is worked out and allowed as under:

<i>(Rs.in lakh)</i>				
2019-20	2020-21	2021-22	2022-23	2023-24
1030.29	1080.32	1133.47	1193.60	1256.59

Working Capital for O& M expenses

45. O&M expenses for one (1) month is allowed as under:

<i>(Rs.in lakh)</i>				
2019-20	2020-21	2021-22	2022-23	2023-24
572.38	600.18	629.71	663.11	698.10

Rate of Interest on working capital

46. In terms of Regulation 34(3) of the 2019 Tariff Regulations, the rate of interest on working capital shall be considered as 12.05% (i.e. one-year SBI MCLR of 8.55% as on 1.4.2019 plus 350 bps) for the tariff period 2019-24. Further, the aforesaid rate of interest is subject to truing up based on one-year SBI MCLR as on 1st April of the respective years of 2019-24 tariff period. The tariff of the generating station is being determined in the year 2021-22 and one-year SBI MCLR as on 1.4.2020 (i.e. 7.75%) and 1.4.2021 (i.e. 7%) is available. Hence, in order to safeguard against additional interest burden due to excess/ under recovery of tariff, we deem it prudent to



consider the rate of interest on working capital for the year 2019-20 as 12.05%, for 2020-21 as 11.25% (i.e. One year SBI MCLR of 7.75% as on 1.4.2020 plus 350 bps) and for the period 2021-24 as 10.50% (i.e. One year SBI MCLR of 7% as on 1.4.2021 plus 350 bps), subject to truing up.

47. Accordingly, interest on working capital is computed as under:

	(Rs.in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
Working Capital for Maintenance spares (15% of O&M Expenses)	1030.29	1080.32	1133.47	1193.60	1256.59
Working Capital for O&M expenses (one month)	572.38	600.18	629.71	663.11	698.10
Working Capital for Receivables (45 days)	1494.68	1543.36	1590.77	1644.41	1693.63
Total Working Capital	3097.35	3223.85	3353.94	3501.11	3648.32
Rate of interest on working capital (%)	12.050	11.250	10.500	10.500	10.500
Interest on Working Capital	373.23	362.68	352.16	367.62	383.07

Annual Fixed Charges

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

	(Rs.in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	929.13	951.79	976.84	989.08	990.11
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	3985.81	4001.80	4017.41	4023.97	4024.42
O&M Expenses	5654.57	5924.10	6206.47	6502.31	6812.24
Security Expenses	1214.00	1278.00	1350.00	1455.00	1565.00
Interest on Working Capital	373.23	362.68	352.16	367.62	383.07
Total	12156.74	12518.37	12902.88	13337.98	13774.85

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.

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



Normative Annual Plant Availability Factor (NAPAF)

50. Regulation 50(A)(4) of the 2019 Tariff Regulations provides for the Normative Annual Plant Availability Factor (NAPAF) for hydro generating stations already in operation. Accordingly, in terms of the said regulation, NAPAF of 70% has been considered for this generating station.

Design Energy

51. The Commission in its order dated 13.1.2016 in Petition No. 43/GT/2015 had considered the annual Design Energy (DE) of 227.24 million units for this generating station. This DE has been considered for this generating station for the period 2014-19 as per month-wise details as under:

Months	Design Energy (MU)
April	11.52
May	12.79
June	22.90
July	14.29
August	55.80
September	31.96
October	20.01
November	11.52
December	11.90
January	11.90
February	10.75
March	11.90
Total	227.24

Application filing fee and publication expenses

52. The Petitioner has sought reimbursement of fees paid by it for filing the petition and for publication expenses and has submitted that the reimbursement of the same 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 filing of this petition, directly from the beneficiaries, on pro-rata basis, in accordance with Regulation 70(1) of the 2019 Tariff Regulations.



53. 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, 2015, shall be recovered from the beneficiaries. In addition, the Petitioner is entitled recovery of statutory taxes, levies, duties, cess etc. levied by the statutory authorities in accordance with the 2019 Tariff Regulations.

Summary

54. The annual fixed charges claimed and allowed for the 2019-24 tariff period are summarized below:

	(Rs.in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
Annual Fixed Charges claimed*	11287.77	11305.77	11653.71	12037.12	12414.89
Annual Fixed Charges allowed	12156.74	12518.37	12902.88	13337.98	13774.85

**Security Expenses have not been included in the above claim. However, the same have been claimed separately and the allowed amount is included in the 'Annual Fixed Charges Allowed'.*

55. Petition No. 232/GT/2020 is disposed in terms of the above.

Sd/-
(Pravas Kumar Singh)
Member

Sd/-
(Arun Goyal)
Member

Sd/-
(I.S. Jha)
Member

Sd/-
(P.K. Pujari)
Chairperson