

PETITION NO. /2021

PETITION

**FOR APPROVAL OF TARIFF OF KAMENG
HYDRO ELECTRIC POWER PLANT (600 MW)
OF NORTH EASTERN ELECTRIC POWER
CORPORATION LIMITED FOR THE PERIOD
FROM COD TO 31.03.2024.**



**ISO: 9001 – 2000
ISO 14001-1996
OHSAS 180001 - 1999**

**NORTH EASTERN ELECTRIC POWER CORPORATION LTD
COMMERCIAL DEPARTMENT**

**Corporate Office:
Brookland Compound : Lower New Colony
Shillong – 793003, Meghalaya**

**BEFORE THE HON'BLE CENTRAL ELECTRICITY REGULATORY
COMMISSION, NEW DELHI**

Petition No. /2018

IN THE MATTER OF:

Petition under Section 62 and 79(1) (a) of the Electricity Act, 2003 read with Chapter –V of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999 and Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 for approval of tariff of Kameng Hydro Electric Power Plant (KaHEP) (4 X 150 = 600 MW) for the period from COD to 31.03.2024;

PETITIONER:

North Eastern Electric Power Corporation Limited
(A Govt. of India Enterprise)
Corporate Office: Brookland Compound,
Lower New Colony, Shillong – 793003
Meghalaya.

RESPONDENTS:

Sl. No.	Name and Address of the Respondent
1	Assam Power Distribution Company Limited, Bijulee Bhawan, Paltan Bazar, Guwahati – 781001.
2	Department of Power, Government of Arunachal Pradesh, Bidyut Bhawan, Itanagar - 794111
3	Meghalaya Power Distribution Corporation Limited, Short Round Road, Lumjingshai, Shillong – 793001
4	Department of Power, Government of Nagaland, Electricity House, Kohima – 797001
5	U.P. Power Corporation Limited, 14 th Floor, Shakti Bhawan Extn., 14-Ashok Marg, Lucknow – 226001.
6	Chhattisgarh State Power Distribution Company Limited, O/O Chief Engineer (RA&PM), 4 th Floor, Vidyut Sewa Bhawan, Dangania (CSEB), Raipur – 492013.
7	Government of Goa, Office of the Secretary (Power), Secretariat, Porvorim, Goa – 403521.
8	Haryana Vidyut Prasaran Nigam, Shakti Bhawan, Sector-6, Panchkula, Haryana.
9	North Eastern Regional Power Committee, NERPC Complex, Dong Parmaw, Lapalang, Shillong-793006, Meghalaya.
10	Eastern Regional Load Despatch Centre, Dongtieh, Lower Nongrah, Lapalang, Shillong -793006, Meghalaya.

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CHAPTER 1 BACKGROUND

It is respectfully submitted that:

1.1 Company Profile:

- 1.1.1 The petitioner North Eastern Electric Power Corporation Ltd (hereinafter referred to as “NEEPCO”) is a Miniratna Schedule "A" Government of India Enterprise under the Ministry of Power, Government of India, which was incorporated on the 2nd of April, 1976 to plan, investigate, design, construct, generate, operate and maintain power stations in the country within the meaning of the Companies Act, 1956. Further it is a ‘Generating Company’ as defined under Section 2(28) of the Electricity Act, 2003. Total installed capacity of the Company is 1757 MW comprising of 1225 MW from 08 nos. hydro power stations, 527 MW from 03 nos. gas based thermal power stations and 5 MW from 01 no. solar PV power plant.
- 1.1.2 The first two 150 MW units of the project have been commissioned and are in commercial operation since 17th June 2020 and 1st July 2020 respectively. Commissioning activities of the 150 MW third and fourth units are in progress and the units are expected to be put into commercial operation in February 2021.

1.2 BACKGROUND OF THE PROJECT:

The Kameng Hydro Electric Project (600 MW), is located in the West Kameng District of the state of Arunachal Pradesh. The project is a run-of-the River scheme with storage envisaging utilization of the waters of the Bichom and Tenga Rivers (both tributaries of the Kameng River) for generation of power. The detailed investigations for the project were sanctioned by the Government of India in late 1968. The Central Water Commission (CWC) prepared the DPR of Kameng Hydro Electric Project in 1982 based on the investigation of the erstwhile Central Water & Power Commission (CW&PC). The Government of India in 1985, decided to execute the Project in the Central Sector through the North Eastern Electric Power Corporation Ltd. (NEEPCO). Accordingly, the project parameters were studied by NEEPCO for review and a fresh proposal considering views of CEA/CWC and technical developments which had taken place during the time was submitted to CEA in September, 1989.

The Techno-economic clearance for the project was granted by the CEA in April, 1991 for execution by NEEPCO at an estimated cost of Rs.1160.60 crore including IDC of Rs.186.38 crore at November, 1990 price levels.

Later Government of Arunachal Pradesh handed over this project to a private company viz. M/s INTERCORP Industries Ltd in October, 1992. Since no work was done by this company for quite some time, Government of Arunachal Pradesh again handed over the project to NEEPCO for execution.

A Memorandum of Understanding was signed between the Government of Arunachal Pradesh and NEEPCO Ltd. on 31.03.99 for execution of this project in the Central sector. This project was taken up as a model project by the Government of India under their policy of 3-Stage development of new hydro-electric projects.

Subsequent to taking over of the project, NEEPCO had started project activities like preconstruction survey and development of infrastructure. After detailed investigation including topographical survey & construction material survey, NEEPCO had firmed up the broad design parameters for all major packages of the project with the help of M/s SMEC, the Design Consultant engaged by NEEPCO.

Updated cost estimate was submitted to CEA in 1999 and cleared by CEA on 06.04.2000 for an amount of Rs. 2264.10 crore (at October 1999 PL). GOI sanctioned Rs. 94.54 crore in July, 2001 for undertaking Preconstruction & infra-structural facilities. The estimate for Civil and Electrical works of the project was again updated at July, 2003 PL to Rs 2538.15 Cr (including IDC of Rs 290.34 Cr) and approved by CEA vide letter No.2/NEEPCO/8/03/PAC/8637-51 dated 31.10.2003.

PIB in its meeting held on 23.04.2004 had made some observations where “the project cost may be updated to March, 2004 PL on the basis of cost of civil works already tendered and updated cost of E&M works”, amongst others, was one of the observations. PIB recommended for consideration of CCEA, investment approval for Kameng HE Project at a cost of Rs 2538.15 crore (July, 2003 PL) subject to observation at Para 4 mentioned in the minutes.

Investment approval of the project was accorded by CCEA on 2nd December 2004 with completion time of the project within a period of 60 months (i.e Dec’09) for an updated cost estimate of Rs 2496.90 crore which included IDC of Rs.249.09 crore at March 2004 PL and Rs 94.54 crore sanctioned for Stage-II activities.

*A copy of the CCEA approval is attached as **Annexure – A.***

Subsequently, a Revised Cost Estimate of Rs. 6,179.96 crore at March 2015 Price Level with Hard Cost of Rs.4, 724.67 crore (Rs.3988.17 crore for Civil cost + Rs.736.50 crore for Electro-Mechanical Cost) and ID&FC of Rs. 1,455.29 crore has been vetted by CEA and is under process for approval in the Ministry of Power, Government of India.

*A copy of the CEA vetting is attached as **Annexure- B.***

The completion cost of the project as on 20.02.2021 (anticipated station COD) has been estimated at **Rs. 8153.06 crore**. The final RCE of Rs. 8153.06 crore as on 20.02.2021 with Hard Cost of Rs.5409.05 crore plus ID&FC amounting to Rs.2744.01 crore is under preparation for submission to the appropriate authorities for vetting and approval.

The various statutory clearances for the project as obtained are given below in chronological order.

▪ Defence clearance:	05.02.1990
▪ TEC by CEA:	11.10.1991
▪ MOU between NEEPCO & GoAP:	31.03.1999
▪ Site clearance exemption obtained:	29.10.1999
▪ Public hearing held on (at Bombdila):	17.11.1999
▪ Assessment of Compensatory Afforestation:	08.12.1999
▪ NOC from State Pollution Control Board:	07.01.2000
▪ Administrative approval for preliminary works:	01.02.2000

- Forest clearance (2nd stage): 03.08.2000
- Environmental clearance: 29.03.2001
- PIB clearance: 23.03.2004
- CCEA clearance: 02.12.2004

The project involves construction of two diversion dams across the Bichom and Tenga Rivers and one number Head Race Tunnel of 14.527 km length with two numbers penstock leading to the Power House for 4(four) numbers of turbine of 150 MW each having total capacity of 600 MW.

The project work was divided into the following seven major packages with details as below:

Package	Description of works	Awarded to	Date of Award/LOI
I	Civil works for Bichom dam and HRT(Faces-1 & 2)	M/s Patel Engg. – Unity JV	08.12.2004
II	Civil works for Tenga dam and HRT(Face-3 to Face-6)	M/s Patel Engg. – Unity JV	08.12.2004
III	Civil works of HRT (Faces-7 to 8), Surge Shaft Power House	M/s Patel Engg. – Unity JV	08.12.2004
IV	Hydro-Mechanical work (Gates & Penstock steel Liner)	M/s OMML and JSC - JV	17.12.2004
V	Electro-Mechanical work for Power House	M/s BHEL	17.12.2004
VI	400 kV & 132 kV Switch yards	M/s Techno Electric & Engg. Co. Ltd.	06.01.2009
VII	Generator & Power Transformer	M/s BHEL	28.03.2008

1.3 Project Profile:

1.3.1 Project Location

Located in the Kameng valley of Arunachal Pradesh, Kameng Hydro Electric Project envisages utilisation of the waters of Rivers Tenga and Bichom (both tributaries of Kameng) on the run of the River basis for power generation. The Bichom River has its origin in the glacial ranges of the greater Himalayas, at an altitude of around 7000 m. The River flows in a general southward direction till it is met by the Digien River, a major tributary flowing from the west. The Digien River also descends from high altitude of the Himalayan ranges and is snow as well as rain fed. After the confluence, the River Bichom runs in a South-east direction for about 19.4 kms till it meets its second major tributary the Tenga River, flowing from the west. Tenga River rises in the hills of lesser Himalayas. It is rainfed and flows in easterly direction upto Jameri and then changes its direction of flow in a north-east direction till it meets the Bichom River. The River Kameng enters the Assam plains at about

32 kms upstream of Charduar and then joins the River Brahmaputra upstream of Tezpur at RL. of 85 m.

1.3.2 Technical Configuration

The Kameng Hydro Electric Project (600 MW) is developed as Run-of-the-River (ROR) scheme in Kameng basin of West Kameng District, Arunachal Pradesh. The project will utilise the flows from Rivers Bichom and Tenga over a gross head of 536m available in a U bend of the River, downstream of the confluence of the Rivers Bichom with Kameng. The Project involves construction of two numbers of Dams, a 69.0m high (above deepest foundation) Bichom dam across Bichom River and a 24.5m high (above deepest foundation) Tenga dam across Tenga River.

The water from Bichom reservoir is transported to the Kimi Power House across the Tenga River, with suitable arrangements to add the Tenga waters into the HRT during the lean period only. Water conductor system from Bichom to Kimi Power House will comprise of approximately 14.527 km long, 6.70m dia Modified Horse Shoe shaped concrete lined Head Race tunnel. The firm power of the project is 168.86 MW with design energy of **3353 MU with 95% Machine availability**.

1.3.3 Power Off take

The power generated from the Kameng Hydro Electric Project will be evacuated through 400 kV Kameng – Balipara D/C Transmission Line of 76 kms and 132 kV Kimi – Khupi – Balipara Line of 69 kms. 400KV double circuit line shall be used to evacuate power upto Balipara grid substation near Tezpur. 132kV S/C line shall also evacuate power from Kimi to Balipara via Tenga. The 132kV Balipara — Tenga — Kameng line is being utilized for construction power supply from the Grid. A 50MVA 220/132kV transformer has been installed for augmentation of Balipara substation.

Shares from this project had been allocated to beneficiary states of the Northern and Western regions in addition to the seven North Eastern states. Subsequently, Punjab, Delhi, Maharashtra, Gujarat, Madhya Pradesh, Rajasthan, Tripura, Mizoram and Manipur accounting for allocated shares totalling 345 MW surrendered their shares and accordingly, the Ministry of Power, Government of India de-allocated these shares and allocated the quantum to the Petitioner, NEEPCO and declared the same as merchant power. Goa too has applied to the Ministry of Power for de-allocation of its share of 2 MW and the matter is under process. Power Purchase Agreements have been executed with the remaining beneficiaries accounting for 253 MW capacity viz. Assam, Arunachal Pradesh, Nagaland, Meghalaya, Uttar Pradesh, Chhattisgarh and Haryana.

CHAPTER 2

TARIFF APPLICATION

- 2.1 NEEPCO has set up the 600 (150 X 4) MW Kameng Hydroelectric Power Plant and is filing this petition (along with Tariff filing forms) in terms of the Regulations 8 & 9 (1) of the CERC (Terms and Conditions of the Tariff) Regulations, 2019 for determination of Tariff of the aforesaid power station for the period from COD to 31st March, 2024.

2.2

Dates of Commercial Operation (COD)

Block/Unit	COD
Unit – I (150 MW)	17.06.2020
Unit - II (150 MW)	01.07.2020
Unit - III (150 MW)	20.02.2021 (Anticipated)
Unit - IV (150 MW)	20.02.2021 (Anticipated)
Station (600 MW)	20.02.2021 (Anticipated)

- 2.3 Section 62 of Electricity Act, 2003 provides for determination of Tariff by the appropriate Commission for the supply of electricity by Generating Company. The Hon'ble Commission is vested with the jurisdiction to regulate the Tariff of the Generating Companies, owned or controlled by the Central Government and other Generating Companies (ISGS) having composite scheme for generation and sale of electricity in more than one state as envisaged under Section 79(1) (a) & (b) of Electricity Act, 2003.

Kameng HEP is a generating station of NEEPCO, which is under the administrative control of the Ministry of Power, and accordingly, supply of electricity to the beneficiaries will be made at the rate determined by the CERC.

- 2.5 Regulation 9 (1) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 provides that a Generating Company may make an application for the determination of Tariff for new generating station or unit thereof in accordance with the Procedures, Regulations, in respect of the generating stations or generating units thereof *within 60 days of the anticipated date of commercial operation*. As per the Regulation 9(1), the generating company shall make an application for determination of Tariff, based on capital expenditure incurred, duly certified by the auditors *or projected to be incurred up to the date of commercial operation and additional capital expenditure projected to be incurred during the Tariff period of the generating station*.
- 2.6 Kameng HE Project (4x150 MW) in Arunachal Pradesh was accorded Government of India approval for execution by NEEPCO Ltd at an estimated cost of Rs.2496.90 crore which included IDC & FC of Rs.249.09 crore at March 2004 Price Level (PL)

and with a commissioning schedule of 5 years from the date of Government sanction (i.e. by 31.12.2009). The sanction was conveyed by Ministry of Power vide letter no. 7/22/99-Hydel-I dated 02.12.2004.

The project was scheduled for commissioning in March 2018 but due to leakages observed in the Penstocks during pre-commissioning stage, the commissioning activities of Units I & II were temporarily suspended to facilitate repairing work of Penstocks I & II. Rectification of Penstock-I was completed in October 2019 and the first two units linked to Penstock-I have been in commercial operation since 17th June 2020 and 1st July 2020 respectively. Rectification of Penstock-2 linked to units 3 and 4 has also been completed and the units are expected to be put into commercial operation in February 2021.

- 2.7 In anticipation of declaring Station COD by 20.02.2021, the Petitioner is filing the present petition for determination of Tariff of the 600 MW (4x150 MW) Kameng Hydro Electric Power Plant based on capital expenditure projected to be incurred up to anticipated COD (i.e 20.02.2021), for the period starting from COD up to 31.03.2024 as per the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019.
- 2.8 The application for determination of Tariff is being submitted along with the duly filled forms as per provisions of the Tariff Regulations, 2019. The filled in Formats prescribed by the applicable Regulations are **enclosed as Annexure-I** attached to this Petition. It is further submitted that the petitioner has submitted the information / documents as required under these formats to the extent the same is available with the Petitioner.

CHAPTER 3

PROJECT CAPITAL COST AND FINANCING

3.1 Project Capital Cost

The completion cost of the project as on 20.02.2021 (anticipated station COD) has been estimated at **Rs. 8153.06 crore**. The final RCE of Rs. 8153.06 crore as on 20.02.2021 with Hard Cost of Rs.5409.05 crore plus IDC&FC amounting to Rs.2744.01 crore is under preparation for submission to the appropriate authorities for vetting and approval.

3.2 Approval of the Project Capital Cost

Investment approval for the setting up of the Kameng Hydro Electric Project at an estimated project cost of Rs.2496.90 crore including IDC Rs.249.09 crore at March 2004 price level had been conveyed by the Ministry of Power, Govt. of India vide their letter no. 7/22/99-Hydel-I dated 2nd December 2004. (Copy attached as **Annexure - A**).

3.2.1 Time and Cost Overrun:

The major factors causing cost enhancements and time overrun are:

- Major design change of primary structures;
- Geological Surprises and natural hindrances;
- Devastating Flash floods;
- Contractual issues;
- Law and order problems; etc.

The details of the time and cost overrun alongwith the reasons and justifications for the same are elaborated in the Tariff Form..... and the attached **Annexure – C**.

3.3 Revised Cost Estimate

The Revised Cost Estimate at Sept 2008 PL was submitted to CEA vide NEEPCO letter No. NEEPCO/ND/F-32/2008-09/196 Dtd. 17.02.12009 based on the revised quantities on account of design parameters. However, during the process of scrutiny of the estimate at CEA, the Package contractor, on expiry of the scheduled contract period of March 2009, have proposed for revision of rate(s) on the balance BOQ items of major hydraulic structures of the project on account of design changes amongst others. Therefore, CEA was requested vide letter No.: NEEPCO/D (T)/KaHEP-4/317 dated 17.08.2009 to kept scrutiny of RCE at Sept'08 PL on hold until a decision on revision of rate are firmed up. In the meantime, the cost incurred against the project has crossed 50 % of the approved Cost during Oct'10 (Rs 1280.07 Cr). Further, the Board in its 180th Meeting held on 15.02.2011 directed NEEPCO to submit RCE to CEA for approval.

Accordingly, Revised Cost Estimate (RCE) at December 2010 PL amounting to Rs 4048.01 Cr (including IDC of Rs 579.46 Cr) was submitted to CEA on 19.03.2011. However, the RCE was returned by CEA on 18.07.2011 requesting NEEPCO to submit a consolidated/comprehensive document incorporating all relevant chapters of approved hydrology/civil design/E&M design/associated drawings/cost estimate

etc for consideration. Accordingly, NEEPCO on 11.10.2011 submitted a comprehensive updated project report along with RCE (at Dec'10 PL) amounting to Rs 4809.59 Cr for clearance of CEA. The subject RCE includes provision for extra works, provision for arbitration or re-tendering in case of cancellation of the contract. As per CEA's letter dated 18.07.2011, RCE submitted requires approval of Board. Therefore, proposal for submission of RCE considering all aspects is submitted before the Board for appraisal and approval in its 184th Board Meeting held on 29.11.2011. The board after detailed deliberation has considered submission of RCE of the project at a cost of Rs 4809.42 Cr to CEA for examination and scrutiny and further needful in obtaining sanction of the Competent Authority.

In the meantime, Member (Hydro), CEA convened a meeting on 24.04.2012 in respect of RCE of Kameng HEP and after detailed deliberation it was concluded that NEEPCO would update the cost of Civil works and E&M works and frame the cost estimates at latest price level excluding the provisions for the unresolved issues with the contractors. Therefore, RCE was again updated to Rs.5139.00 Cr (including IDC) at December 2011 PL and submitted to CEA on 16.05.2012 for examination and concurrence. An amount of Rs 1503.51 Cr (excluding IDC) has already been incurred against the completed works till the end of December, 2011.

After examination of RCE at December 2011 PL by various divisions of CWC/CEA, the Hard Cost of Civil Works and E&M Works were tentatively finalized at Rs 2849.30 Cr and Rs. 616.96 Cr respectively on 29/9/2013. In the meantime, IDC&FC and tariff have been finalized by F&CA Division, CEA on 08/10/13 for Rs 1187.69 Cr and the 1st year & Levellised tariff for Rs 3.51/Kwh & Rs 3.07/Kwh respectively. Later on, CEA submitted its recommendation on RCE for a capital cost of Rs 4653.95 Cr to MOP, GOI on 11.12.13.

However, as decided in the meeting taken by Joint Secretary (Hydro) on 18.02.2015 to review the status of proposals related to PIB Notes/RCEs of various projects of Hydro PSUs, RCE updated to Rs. 6476.34 cr (excluding IDC) at Dec-2014 PL and submitted to MOP, GOI on 12.03.15. CEA/CWC during examination of RCE desires updating of RCE to Mar'15 PL. Accordingly RCE updated to Rs 5100.16 Cr (excluding IDC) at Mar'15 PL submitted to CEA/CWC on 23.07.2015.

CEA on 09/10/2015 has forwarded the duly vetted RCE (at Mar'15 PL) to MOP, GOI for a Hard cost of Rs 4617.36 Cr. CEA vide I.D. Notes dated 06.11.2015 vetted the RCE-I (at March 2015 PL) for Rs. 6085.84 Cr including IDC &FC of Rs.1468.48 Cr.

Subsequently, in terms of the meeting taken by JS (Hydro) on 27.11.2015, CEA has revised the provision made in RCE-I under the head - Establishment from Rs 196.82 crore to Rs 304.13 crore. Accordingly, CEA vide ID Note dated 18.03.2016 intimated to the Ministry that vetted hard cost has been revised from Rs 4617.36 crore to Rs 4724.67 crore at March, 2015 PL and total project cost including IDC&FC from Rs 6085.84 crore to Rs 6179.96 crore.

Subsequent to vetting of Revised Cost Estimate (RCE) of Kameng HE Project (March 2015 Price Level) by CEA as conveyed vide letter dated 18.03.2016, (ANNEXURE-B) 1st meeting of the Standing Committee was convened on 22-04-16. Thereafter, note on time and cost overrun was circulated amongst the re constituted Revised Cost Committee members by Ministry of Power on 21.12.2016 duly incorporating the response of NEEPCO on the observation of 1st meeting of the Standing Committee dtd 22-04-16.

Revised Cost Committee in its meeting held on 03.02.2017, 01.05.2017 & 28.12.2017 deliberated on the Time and cost over-run of the project. Revised Cost Committee during its meeting on 28.12.2017 opined that as the project is likely to be completed by March 2018, it would be more appropriate to consider the Revised Cost Estimate at completion cost instead of going for interim RCE at this stage. Accordingly, NEEPCO was directed to submit the RCE proposal at completion cost utmost by 15th May 2018.

The project was scheduled for commissioning in March 2018 but due to leakages observed in the Penstocks during pre-commissioning stage the commissioning activities of Units I & II were temporarily suspended to facilitate repairing work of Penstocks I & II. Rectification of Penstock-I was completed in October 2019 and the first two units linked to Penstock-I has been under commercial operation since June 2020. Rectification of Penstock-2 linked with last two units has been completed and the 3rd and 4th units are expected to be put into commercial operation in February 2021.

The completion cost of the project as on 20.02.2021 (anticipated station COD) has been estimated at **Rs. 8153.06 crore**. The final RCE of Rs. 8153.06 crore as on 20.02.2021 with Hard Cost of Rs.5409.05 crore plus IDC&FC amounting to Rs.2744.01 crore is under preparation for submission to the appropriate authorities for vetting and approval.

3.4 Financing Plan

The expenditure on the project is to be met by NEEPCO with debt equity ratio of 70:30, which includes Rs.94.54 crore sanctioned for stage – II activities. The project cost is subject to adjustment in accordance with the final recommendation of CEA/CWC on the component of Establishment cost.

3.5 Time and Cost Overrun:

The details of the time and cost overrun alongwith the reasons and justifications for the same are elaborated in the Tariff Form..... and the attached **Annexure – C**.

CHAPTER 4

TARIFF DETERMINATION

This section of the petition contains computation of Annual Fixed Cost and Energy Charges from 17th June'2020 (since COD of the 1stUnit) to the FY 2020-24 in terms of the CERC Tariff Regulations, 2019.

4.1 Capital cost as on COD:

The capital cost for arriving at the AFC as on Station COD dated 20th February, 2021 is considered as below:

Hard Cost: Rs.5409.05 crore
IDC & FC: Rs.2744.01 crore
Total: Rs.8153.06 crore

Capital Cost as on 17/06/2020 (COD of Unit-I) and Capital Cost on 01/07/2020 (COD of Unit-II) were Rs. 6594.30 Crore and Rs. 6865.62 Crore respectively. However, for the purpose of calculation of AFC, the costs of major common assets were apportioned to different units i.e for Unit-I is Rs. 2960.54 Crore and for Unit-II is Rs. 4443.11 Crore and accordingly the Tariff Form 11 is modified incorporating the effect of apportioned cost of major common assets. The capital cost for the purpose of calculating AFC has been taken from the modified Tariff Form 11

4.2 Funding Pattern:

Debt: Equity, 70:30 i.e Rs.5707.14 crore: Rs.2445.92 crore

4.3 Operational Norms

The Tariff proposal is based on the following operational norms:

Table: Normative Operating Parameters of the Project

Description	Units	Normative Parameters
Target NAPAF for recovery of fixed charges and for incentive	%	85
Auxiliary Energy Consumption	%	1%

However, the petitioner prays before the Hon'ble Commission for allowing relaxation of the above operating parameters of the power station based on actual performance in future.

4.4 Determination of Annual Fixed Cost

The Annual Fixed Cost (AFC) of the generating station consist of the following components:

- 4.2.1 Return on Equity (grossed up with effective tax rate);
- 4.2.2 Interest on Loan capital;
- 4.2.3 Depreciation;
- 4.2.4 Interest on Working Capital; and
- 4.2.5 Operation and Maintenance (O&M) Expenses.

Summary of Annual Fixed Charges

4.2.1 Return on Equity

- (a) As per the Regulation 30 of the Tariff Regulations, 2019, Return on Equity shall be computed at the base rate of 16.50% for thermal generating stations, transmission system including communication system and run of the Riverhydrogenerating station. The Kameng Hydro Electric Project being a Run-of-the-River (ROR) with small pondage scheme, the base rate of 16.50% has been taken for computation of return on equity.
- (b) MAT rate @ 17.47% has been considered for the purpose of grossing up of ROE. Impact of applicable tax rate for the Financial Years 2019-20 and 2020-21 after filing the returns may kindly be allowed to pass on in accordance with the regulations.
- (c) The ROE for each period/year of the Tariff Period for KaHEP since COD of Unit –I till 31.03.2024 are as below:

Table: Return on Equity

Rs. in lakh

Particulars	17.06.20 to 30.6.20	01.07.20 to 19.02.21	20.02.21- 31.3.21	2021-22	2022-23	2023-24
Opening equity	7322.90	85714.22	130261.01	241609.05	241609.05	241609.05
Closing equity	85714.22	130261.01	241609.05	241609.05	241609.05	241609.05
Average equity	46518.56	107987.62	185935.03	241609.05	241609.05	241609.05
Rate of ROE (grossed up)	19.99	19.99	19.99	19.99	19.99	19.99
Return on Equity	356.73	13841.23	4073.86	48304.90	48304.90	48304.90

4.2.2 Interest on Loan Capital

- (a) Regulation 32 of the Tariff Regulations, 2019 provides as under: -
- (i) The rate of interest on loan shall be the weighted average Rate of interest (ROI) calculated on the basis of actual loan portfolio after providing appropriate accounting adjustment for interest capitalized;
 - (ii) The Interest on loan shall be calculated on the average normative loan of the year by applying aforesaid weighted average rate of interest.
- (b) The petitioner submits that it is liable to pay Interest at the Interest Rate applicable as per the Loan agreement.
- (c) Depreciation amount for respective period/financial year has been considered as the annual repayment of normative loan for the year.
- (d) Based on the application of weighted average rate of interest as at the beginning of each year on the average normative Loans of the year during the Tariff Period, interest on Loan will be as under: -

Table: Interest on Loan Capital

Rs. in lakh

Particulars	17.06.20 to 30.6.20	01.07.20 to 19.02.21	20.02.21- 31.3.21	2021-22	2022-23	2023-24
Gross normative loan – opening	17086.78	199999.85	303942.35	563754.46	563754.46	563754.46
Cum. Repayment up to the previous year	0.00	332.80	12880.59	16484.91	59222.30	101959.68
Net normative loan – opening	17086.78	199667.05	291061.76	547269.55	504532.16	461794.78
Increase/(decrease) of normative loan	182913.08	103942.50	259812.11	0.00	0.00	0.00
Repayment during the period/year	332.80	12547.79	3604.32	42737.38	42737.38	42737.38
Net normative loan – closing	199667.05	291061.76	547269.55	504532.16	461794.78	419057.40
Average normative loan	108376.91	245364.40	419165.65	525900.86	483163.47	440426.09
Weighted average rate of interest (based on actual loan) (in %)	0.1051	0.1051	0.1051	0.0858	0.0848	0.0836
Interest on loan	436.85	16530.75	4827.37	45113.30	40978.25	36834.85

4.2.3 Depreciation

- (a) The base value for the purpose of computation of Depreciation is the estimated Project Capital cost of **Rs.8153.06** crore as on anticipated station COD.
- (b) Depreciation on estimated cost of assets has been calculated based on straight line method over the useful life of the asset, at the rates

prescribed under Appendix I- Schedule of depreciation of CERC (Terms & Conditions of Tariff) Regulations, 2019.

- (c) 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.
- (d) The petitioner submits that based on capital value of assets, the weighted average depreciation rates for the FY 20-21 are 5.6%, 5.4%, 5.3% & 5.3% for unit I, II, III & IV respectively. From FY 21-22 to FY 2023-24 the weighted average depreciation rate works out to 5.3% and the same is considered for the purpose of computation of Annual Fixed Cost.

Depreciation amount for each year of the Tariff Period are as under:

Table: Depreciation statement:

Particulars	Rs. in lakh					
	17.06.20 to 30.6.20	01.07.20 to 19.02.21	20.02.21- 31.3.21	2021-22	2022-23	2023-24
Opening capital cost	24409.68	285714.07	434203.36	805363.51	805363.51	805363.51
Closing capital cost	285714.07	434203.36	805363.51	805363.51	805363.51	805363.51
Average capital cost	155061.88	359958.72	619783.44	805363.51	805363.51	805363.51
Freehold Land	441.06	441.06	441.06	441.06	441.06	441.06
Rate of depreciation (%)	0.056	0.054	0.053	0.053	0.053	0.053
Depreciation	332.80	12547.79	3604.32	42737.38	42737.38	42737.38

4.2.4 Interest on Working Capital

The interest on working capital has been worked out as per the norms prescribed in regulation 34 (c) of the CERC Tariff Regulations, 2019. The following have been considered for determining the base for working capital in a year:

Maintenance Spares:

This is based on @ 15% of Operation and Maintenance expenses specified in regulation 35(2)(b) of the Tariff Regulations, 2019.

A Table showing the amounts for maintenance spares for each year of the Tariff Period is as under:-

Table: Maintenance Spares for one year (15% of O&M Expenses for one year)

<i>₹ in lakh</i>						
Particulars	17.06.20 to 30.6.20	01.07.20 to 19.02.21	20.02.21- 31.3.21	2021-22	2022-23	2023-24
Maintenance spares	40.61	848.73	223.46	2136.34	2238.24	2345.00

Receivables:

Receivable amount will be equivalent to 45 days of fixed cost.

A Table showing the receivables for each year/period during the Tariff period is as under:-

Table: Receivables component in Working Capital

<i>₹ in lakh</i>						
Particulars	17.06.20 to 30.6.20	01.07.20 to 19.02.21	20.02.21- 31.3.21	2021-22	2022-23	2023-24
Receivables	177.93	6174.36	1778.38	19105.32	18669.58	18236.99

O&M Expenses:

As per the Regulation 35(2)(b) of CERC (Terms and Conditions of Tariff) Regulations, 2019, in case of hydro generating stations declared under commercial operation on or after 01.04.2019, O&M expenses shall be fixed at 3.5% of the original project cost (excluding cost of rehabilitation & resettlement works, IDC & IEDC) for first year of commercial operation for stations more than 200 MW and shall be subject to annual escalation of 4.774% per annum for the subsequent years.

Hence, O&M expenses for the first year are considered @ 3.50% of the project cost, with annual escalation of 4.77% per annum for the subsequent years.

Table: O&M expenses for one month:

<i>₹ in lakh</i>						
Particulars	17.06.20 to 30.6.20	01.07.20 to 19.02.21	20.02.21- 31.3.21	2021-22	2022-23	2023-24
O&M expenses for 1 month	22.56	471.52	124.14	1186.85	1243.47	1302.78

Based on the above, interest on working capital is shown below:

Rs. in lakh

Particulars	17.06.20 to 30.6.20	01.07.20 to 19.02.21	20.02.21- 31.3.21	2021-22	2022-23	2023-24
Maintenance Spares	40.61	848.73	223.46	2136.34	2238.24	2345.00
Receivables	177.93	6174.36	1778.38	19105.32	18669.58	18236.99
O & M Expenses	22.56	471.52	124.14	1186.85	1243.47	1302.78
Total Working Capital	241.10	7494.61	2125.98	22428.51	22151.28	21884.78
Rate of Interest	10.90%	10.90%	10.90%	10.90%	10.90%	10.90%
Int. on Working Capital	26.28	816.91	231.73	2444.71	2414.49	2385.44

Normative O&M expenses for the period/financial years are as below:

Table for normative O&M expenses

₹ in lakh

Particulars	17.06.20 to 30.6.20	01.07.20 to 19.02.21	20.02.21- 31.3.21	2021-22	2022-23	2023-24
O&M Expenses	270.76	5658.21	1489.73	14242.24	14921.60	15633.36

4.26 Annual Fixed Cost

Summary of the estimated Annual Fixed Cost for the financial years from 17.6.2020(As on COD of Unit-I) to 2023-24 is as under:-

Table: Annual Fixed Cost

₹ in lakh

Particulars	17.06.20 to 30.6.20	01.07.20 to 19.02.21	20.02.21- 31.3.21	2021-22	2022-23	2023-24
Depreciation	332.80	12547.79	3604.32	42737.38	42737.38	42737.38
Interest on Loan	436.85	16530.75	4827.37	45113.30	40978.25	36834.85
Return on Equity	356.73	13841.23	4073.86	48304.90	48304.90	48304.90

Interest on Working Capital	26.28	816.91	231.73	2444.71	2414.49	2385.44
O & M Expenses	270.76	5658.21	1489.73	14242.24	14921.60	15633.36
Total	1423.42	49394.90	14227.02	152842.54	149356.62	145895.93

CHAPTER-5

Miscellaneous Issues

- 5.1 It is submitted that the petitioner has deposited the requisite filing fee of Rs..... (Rupeesonly) for the year 2020-21 in accordance with CERC (Payment of Fees) Regulations, 2012 and amendment thereof is paid vide UTR NoDated for determination of tariff of the generating station till 31.03.2024.

CHAPTER-6

PRAYER

The present petition is submitted before the Hon'ble Commission for determination of Tariff of the Kameng Hydro Electric Plant. In view of the above facts and circumstances described above in detail, the Petitioner humbly prays to the Hon'ble Commission that it may be pleased to:-

- 6.1 Approve the Project capital Cost of Rs.**8153.06** crore as on anticipated station COD for determination of tariff as for the 600 MW Kameng Hydro Electric Plant.
- 6.2 Approve the normative IDC&FC of Rs.2744.01 crore in terms of Regulation 19(2)(b) of the Tariff Regulations, 2019 which is included in the Project Capital Cost indicated above.
- 6.3 Allow the Petitioner to file revised petition on actual expenditure in the event of any revised financial package, if any, as per CERC regulations.
- 6.4 Approve the AFC for Kameng (600 MW) Hydro Electric Plant (KaHEP) for the Tariff period from COD to 31.03.2024 as per claim along with the petition for sale of power generated from the plant.
- 6.5 Petitioner may kindly be allowed to bill on Energy Charge by the Energy Charge Rate with free power.
- 6.6 Allow recovery of filing fees of this petition from the beneficiaries.
- 6.7 Allow recovery of publication expenses from the beneficiaries incurred with regard to this petition.
- 6.8 Allow recovery from the beneficiaries any such tax, cess etc. levied on NEEPCO in relation to generation and supply/distribution of electricity.
- 6.9 Allow modification/change in operational norms based on actual performance experienced by the generating station.
- 6.10 Allow additions / alterations / changes / modifications to the petition at a future date.
- 6.11 Condone any inadvertent omissions / errors / differences / shortcomings.
- 6.12 Pass such order / orders as deemed fit and proper in the facts and circumstances of the case.

**NORTH EASTERN ELECTRIC POWER CORPORATION LIMITED
THROUGH**

(Elizabeth Pyrbot)
Dy. General Manager (E/M)

Annexure -I

PART-II

TARIFF FILING FORMS (HYDRO)

Checklist of Forms and other information/ documents for tariff filing for Hydro Stations

Form No.	Title of Tariff Filing Forms (Hydro)	Tick
FORM-1	Summary Sheet	√
FORM -1 (I)	Statement showing claimed capital cost	
FORM -1 (II)	Statement showing Return on Equity	
FORM-2	Details of COD, Type of hydro station, Normative Annual Plant Availability Factor(NAPAF) & other normative parameters considered for tariff calculation	√
FORM-3	Salient features of Hydroelectric Project	√
FORM-4	Details of Foreign loans	√
FORM-4 A	Details of Foreign Equity	√
FORM-5	Abstract of Admitted Capital Cost for the existing Projects	√
FORM-5A	Abstract of Capital Cost Estimates and Schedule of Commissioning for the New projects	√
FORM-5B	Break-up of Capital Cost for Hydro Power Generating Station	√
FORM-5C	Break-up of Capital Cost for Plant and Equipment	√
FORM-5D	Break-up of Construction/Supply/Service packages	√
FORM-5E i	In case there is cost over run	√
FORM-5E ii	In case there is time over run	√
FORM-5F	In case there is claim of additional ROE	√
FORM-6	Financial Package upto COD	√
FORM-7	Details of Project Specific Loans	√
FORM-8	Details of Allocation of corporate loans to various projects	√
FORM-9A	Statement of Additional Capitalisation after COD	√
FORM- 9B	Statement of Additional Capitalisation during end of the Project	√
FORM- 9B i	Details of Asset decapitalised during the period	√
FORM- 9C	Statement showing reconciliation of ACE claimed with the capital addition as per Books	√
FORM- 9D	Statement showing items/assets/works claimed under Exclusions	√
FORM- 9E	Statement of Capital Cost	√
FORM- 9F	Statement of Capital Works in Progress	√
FORM-10	Financing of Additional Capitalisation	√

FORM- 11	Calculation of Depreciation on original project cost	√
FORM- 12	Statement of Depreciation	√
FORM- 13	Calculation of Weighted Average Rate of Interest on Actual Loans	√
FORM-13A	Calculation of Interest on Normative Loan	√
FORM- 13 B	Calculation of Interest on Working Capital	√
FORM- 13 C	Non-Tariff Income	√
FORM- 13 D	Incidental Expenditure during Construction	√
FORM- 14	Draw Down Schedule for Calculation of IDC & Financing Charges	√
FORM- 14A	Actual cash expenditure	√
FORM-15 A	Design Energy and Peaking Capability (month-wise) – ROR with pondage /storage type New Station	√
FORM-15 B	Design Energy and MW Continuous (month-wise) – ROR type Station	N. A.
FORM- 16	Liability Flow Statement	√
Other Information/ Documents		
Sl. No.	Information/Document	Tick
1	Certificate of incorporation, Certificate for Commencement of Business, Memorandum of Association, & Articles of Association (For New Station setup by a company making tariff application for the first time to CERC)	N.A.
2	A. Station-wise and Corporate audited Balance Sheet and Profit & Loss Accounts with all the Schedules & annexures on COD of the Station for the new station & for the relevant years. B. Station wise and Corporate audited Balance Sheet and Profit & Loss Accounts with all the Schedules & annexures for the existing station for the relevant years.	N.A.
3	Copies of relevant loan Agreements	√
4	Copies of the approval of Competent Authority for the Capital Cost and Financial package.	√
	Copies of the Equity participation agreements and necessary approval for the foreign equity.	
6	Copies of the BPSA/PPA with the beneficiaries, if any	√
7	Detailed note giving reasons of time and cost overrun, if applicable. List of supporting documents to be submitted: a. Detailed Project Report b. CPM Analysis c. PERT Chart and Bar Chart d. Justification for cost and time Overrun	√
8	Generating Company shall submit copy of Cost Audit Report along with cost accounting records, cost details, statements, schedules etc. for the Generating Unit wise /stage wise/Station wise/ and subsequently consolidated at Company level as submitted to the Govt. of India for first two years i.e. 2019-20 and 2020-21 at the time of mid-term true-up in 2012-22 and for balance period of tariff period 2019-24 at the time of final trueup	

	in 2023-24. In case of initial tariff filing, the latest available Cost Audit Report should be furnished.	
9	Any other relevant information, (Please specify)	
10	Reconciliation with Balance sheet of any actual additional capitalization and amongst stages of a generating station	

Note: Electronic copy of the petition (in words format) and detailed calculation as per these formats (in excell format) and any other information submitted shall also be furnished in the form of CD/Floppy disc .