

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 42/GT/2015

Coram:

Shri Gireesh B. Pradhan, Chairperson

Shri A. K. Singhal, Member

Shri A. S. Bakshi, Member

DATE OF HEARING: 16.07.2015

DATE OF ORDER: 13.01.2016

IN THE MATTER OF

Approval of tariff of Khandong Hydro Electric Power Plant (2X25 MW) of North Eastern Electric Power Corporation Limited for the period from 1.4.2014 to 31.3.2019

AND

IN THE MATTER OF

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

.....**Petitioner**

Vs

1. Assam Power Distribution Company Ltd.
"Bijulee Bhawan", Paltanbazar
Guwahati-781 001

2. Meghalaya Energy Corporation Ltd.
Meter Factory Area, Short Round Road
Integrated Office Complex
Shillong-793 001

3. Tripura State Electricity Corporation Ltd.
Bidyut Bhavan, North Banamalipur
Agartala-799 001

4. Power and Electricity Department
Govt. of Mizoram
P&E Office Complex, Electric Veng,
Aizwal-796 001

5. Manipur State Power Distribution Company Ltd.,
Electrical Complex, Khawai Bazar,
Keishampat, Imphal-795 001

6. Department of Power
Govt. of Arunachal Pradesh
Vidyut Bhawan, Itanagar-791111



7. Department of Power
Govt. of Nagaland
Kohima-797 001

8. North Eastern Regional Power Committee
NERPC Complex, Dong Parmaw
Lapalang , Shillong-793 006

9. North Eastern Regional Load Despatch Centre
Dongtiah, Lower Nongrah
Lapalang, Shillong-793 006

...Respondents

Parties present:

Shri Rana Bose, NEEPCO
Shri Paresh Ch. Barman, NEEPCO
Shri Devapriya Choudhary, NEEPCO
Ms. Elizabeth Pyrbot, NEEPCO
Shri K. Goswami, APDCL
Shri M.K Adhikary, APDCL

ORDER

This petition has filed by petitioner, North Eastern Electric Power Corporation Ltd (NEEPCO) for approval of tariff of Khangong Hydro Electric Project (2 x 25 MW) (hereinafter referred to as “the generating station”) for the period 2014-19, in terms of the provisions of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (“the 2014 Tariff Regulations”).

2. Kopili Hydro-electric Project Stage – I (hereinafter referred to as the “project”) comprises two generating stations, viz Khandong Hydro-electric Generating Station (2 x 25 MW) and Kopili Hydro-electric Station (4 x 50 MW). The project comprises two concrete dams viz. Khandong Dam and Umrong Dam and two corresponding reservoirs with two separate water conduit systems and two power houses. Khandong dam is across river Kopili which is a perennial river. Water from this reservoir is diverted through a tunnel of 4.5 meter diameter and 2.76 km in length. The tail race discharge from the generating station is diverted to the Umrong reservoir through an open channel. First unit of the generating station was declared under commercial operation on 7.3.1984 and the second unit on 4.5.1984. The annual design energy of the generating station is 227.61 MUs.



3. The tariff of the generating station for the period 2009-14 was determined by the Commission vide order dated 30.9.2011 in Petition No.297/2009 based on capital cost of ₹12194.00 lakh as on 1.4.2009. Thereafter, by order dated 2.7.2014 in Petition No.236/GT/2013, the annual fixed charges of the generating station was revised based on truing-up of the actual capital expenditure incurred during the years 2009-10 to 2011-12 and projected capital expenditure during the years 2012-13 and 2014. Subsequently, by Commission's order dated 6.10.2015 in Petition No.454/GT/2014, the tariff of the generating station for the period 2009-14 was revised after truing-up exercise with respect to capital expenditure including additional capital expenditure incurred during the period 2009-14. Accordingly, the annual fixed charges approved by Commission's order dated 6.10.2015 is as under:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Return on Equity	1135.37	1183.04	1189.21	1209.56	1284.19
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Depreciation	505.05	515.42	525.80	549.38	554.05
Interest on Working Capital	80.53	84.39	87.54	91.41	96.20
O & M Expenses	926.39	979.38	1035.40	1094.62	1157.23
Total	2647.34	2762.23	2837.94	2944.98	3091.67

4. The petitioner vide affidavit dated 19.12.2014 has prayed for determination of tariff of the generating station for the period 2014-19 in accordance with the provisions of the 2014 Tariff Regulations. Accordingly, the annual fixed charges claimed by the petitioner for the period 2014-19 are as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	781.07	1482.03	2154.35	2563.48	3324.41
Interest on Loan	47.92	155.25	142.99	44.56	0.00
Return on Equity	1373.70	1797.51	2058.39	2130.12	2200.12
Interest on Working Capital	118.86	151.87	177.90	191.86	215.46
O & M Expenses	1233.87	1317.89	1405.45	1498.82	1598.41
Total	3555.42	4904.55	5939.08	6428.84	7338.40

5. Reply to the petition has been filed by the respondent No.1, APDCL. The petition was heard on 7.4.2015 and the Commission vide Record of proceedings directed the petitioner to file certain additional information. In response, the petitioner vide affidavit dated 10.6.2015 has



filed the information with copy to the respondents. Thereafter, the matter was heard on 16.7.2015 and the Commission after directing the petitioner to file certain additional information, reserved its orders in the petition.

6. Based on the submissions of the parties and the documents available on record and on prudence check, we proceed to determine the tariff of the generating station for the period 2014-19 as stated in the subsequent paragraphs.

Capital Cost

7. Clause (1) of Regulation 9 of the 2014 Tariff Regulations provides that the capital cost as determined by the Commission after prudence check, in accordance with this regulation shall form the basis of determination of tariff for existing and new projects. Clause (3) of Regulation 9 provides as under:

“9(3) The Capital cost of an existing project shall include the following: (a) the capital cost admitted by the Commission prior to 1.4.2014 duly trued up by excluding liability, if any, as on 1.4.2014;

(b) xxxx

c) xxxx

8. The Commission in its order dated 6.10.2015 in Petition No.454/GT2014 had approved the closing capital cost of ₹12438.28 lakh as on 31.3.2014. This has been considered as the opening capital cost as on 1.4.2014 for the purpose of determination of tariff of the generating station for the period 2014-19.

Additional Capital Expenditure

9. Clause (3) of Regulation 7 of the 2014 Tariff Regulations provides that the application for determination of tariff shall be based on admitted capital cost including any additional capital expenditure already admitted upto 31.3.2014 (either based on actual or projected additional capital expenditure) and estimated additional capital expenditure for the respective years of the tariff period 2014-15 to 2018-19. Clause (3) of Regulation 14 of the 2014 Tariff Regulations provides as under:



“14.(3) 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 after the cut-off date, may be admitted by the Commission, subject to prudence check:

(i) Liabilities to meet award of arbitration or for compliance of the order or decree of a court of law;

(ii) Change in law or compliance of any existing law;

(iii) Any expenses to be incurred on account of need for higher security and safety of the plant as advised or directed by appropriate Government Agencies of statutory authorities responsible for national security/internal security;

(iv) Deferred works relating to ash pond or ash handling system in the original scope of work;

(v) Any liability for works executed prior to the cut-off date, after prudence check of the details of such un-discharged liability, total estimated cost of package, reasons for such withholding of payment and release of such payments etc.;

(vi) Any liability for works admitted by the Commission after the cut-off date to the extent of discharge of such liabilities by actual payments;

(vii) Any additional capital expenditure which has become necessary for efficient operation of generating station other than coal / lignite based stations or transmission system as the case may be. The claim shall be substantiated with the technical justification duly supported by the documentary evidence like test results carried out by an independent agency in case of deterioration of assets, report of an independent agency in case of damage caused by natural calamities, obsolescence of technology, up-gradation of capacity for the technical reason such as increase in fault level;

(viii) In case of hydro generating stations, any expenditure which has become necessary on account of damage caused by natural calamities (but not due to flooding of power house attributable to the negligence of the generating company) and due to geological reasons after adjusting the proceeds from any insurance scheme, and expenditure incurred due to any additional work which has become necessary for successful and efficient plant operation;

(ix) In case of transmission system, any additional expenditure on items such as relays, control and instrumentation, computer system, power line carrier communication, DC batteries, replacement due to obsolescence of technology, replacement of switchyard equipment due to increase of fault level, tower strengthening, communication equipment, emergency restoration system, insulators cleaning infrastructure, replacement of porcelain insulator with polymer insulators, replacement of damaged equipment not covered by insurance and any other expenditure which has become necessary for successful and efficient operation of transmission system; and

(x) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receiving system arising due to non-materialization of coal supply corresponding to full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station:

Provided that any expenditure on acquiring the minor items or the assets including tools and tackles, furniture, air-conditioners, voltage stabilizers, refrigerators, coolers, computers, fans, washing machines, heat convectors, mattresses, carpets etc. brought after the cut-off date shall not be considered for additional capitalization for determination of tariff w.e.f. 1.4.2014:

Provided further that any capital expenditure other than that of the nature specified above in (i) to (iv) in case of coal/lignite based station shall be met out of compensation allowance:

Provided also that if any expenditure has been claimed under Renovation and Modernisation (R&M), repairs and maintenance under (O&M) expenses and Compensation Allowance, same expenditure cannot be claimed under this regulation.”



10. The year-wise breakup of the actual/ projected additional capital expenditure claimed by the petitioner is as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Additional Capital Expenditure claimed on gross basis	3191.31	3610.67	1112.00	955.00	1100.00
De-capitalization	(-) 351.00	(-) 58.03	(-) 27.00	(-) 127.00	(-) 61.00
Net Additional Capital Expenditure claimed	2840.31	3552.64	1085.00	828.00	1039.00

11. It is noticed that the petitioner has claimed an projected additional capital expenditure of ₹9968.98 lakh during the period 2014-19 which includes expenditure of ₹4643.82 lakh towards replacement of assets and ₹5325.16 lakh towards New assets/works. It is observed that major expenditure claimed on under replacement include machinery components which had worn out /corroded due to the acidic nature of water. It is pertinent to mention that the problem of acidic nature of water became evident during the period after June, 2006 when the same was tested by the Geological Survey of India NER, Meghalaya Pollution Control Board and the Centre for Soil and Material Research Station, New Delhi. Based on the recommendations of the expert committee comprising of CEA, CWC and CSMRS and since the assets are necessary for efficient operation of the generating station, the Commission by order dated 30.9.2011 in Petition No.297/2009 had allowed the expenditure for replacement of assets/repair of the assets and procurement of new assets on account of damage caused due to acidic nature of water in terms of Regulation 9(2)(iv) of the 2009 Tariff Regulations. It was also made clear in the said order that the expenditure towards treatment of assets should not be frequent and should be for a longer period failing which the expenses cannot be capitalized and would fall under the category of O&M expenses. The relevant portion of the order dated order dated 30.09.2011 is extracted as under:

“23. We now examine the claim of the petitioner for replacement of assets damaged due to acidic nature of water. It is observed that most of the items/assets which have been damaged and replaced or repaired due to acidic nature of water (pHvalue 3.36 to 5.44 instead of the normal pH value of 6.5 to 8.5) are sought to be replaced. The quality of the water became evident during the period after June,2006, when the same was tested by the Geological Survey of India, North Eastern Region, Shillong, the Meghalaya State Pollution Control Board and the Centre for Soil and Material Research Station (CSMRS), New Delhi. The expert committee comprising of the CEA, CWC and the CSMRS had also visited the project site during the period from 27.2.2009 to 3.3.2009 and has suggested for routine testing of water in the area, concrete core drilling at specified locations in Khandong Dam, test of silt & slush, monitoring of seepage etc., Repair and



replacement of corroded machine components, replacement of guide vanes with stainless steel materials, replacement of cooling pipes and tubes with suitable materials with epoxy coating. The expert committee had also recommended various short-term and long-term measures to be taken up. In the light of the recommendations of the expert committee, the petitioner has sought the replacement of assets/repair of assets and procurement of new assets, on account of damage caused due to the acidic nature of water. Taking into consideration the recommendations of the expert committee and since these assets are necessary for the efficient operation of the generating station, we are of the view that the expenditure to be incurred for replacement of the assets/repair of the assets and the procurement of new assets on account of the damage caused due to the acidic nature of water should be allowed in terms of Regulation 9(2)(iv) of the 2009 regulations. We proceed accordingly. However, it is expected that the expenditure towards treatment of the assets in order to encounter the acidic nature of water should not be frequent (within a year or two) and should be for a longer period (more than five years), failing which, the expenses cannot be capitalized and would fall under the category of O & M expenses for which the petitioner may be required to approach the Commission separately with a detailed project report for carrying out the renovation works, which would be considered in accordance with law.”

12. It is further noticed that against the projected additional capital expenditure of ₹7273.15 lakh allowed on projected basis, the petitioner had capitalized expenditure on assets amounting to ₹244.76 lakh during 2009-14. As regards the variation, the petitioner had clarified that certain expenditure of the nature of repairs and maintenance was allowed by the Commission as projected additional capital expenditure for the period 2009-14 considering the water acidity problems specific to the generating station causing damage to the underwater parts and the petitioner has already incurred a major portion of the expenditure allowed during the period 2009-14. However, the petitioner further submitted that considering the nature of such activities as well as to ensure compliance with the relevant accounting standards/policy, the expenditure has not been claimed as capital expenditure and has been excluded from the scope of the present petition for the purpose of revision of the annual fixed charges.

13. It is evident from the above submission that though the petitioner had incurred expenditure on replacement of corroded components during 2009-14, major portion of the expenditure which are in the nature of O&M expenses could not be capitalized. The expenses towards replacement of worn out/ corroded components have been charged to O&M expenses by the petitioner for the period 2009-14 and the same has been considered in the normative O&M expenses allowed to the generating station under the 2014 Tariff Regulations applicable for the period 2014-19. Accordingly, the projected additional capital expenditure claimed by the petitioner during the period 2014-19 i.e expenditure on replacement of cooler



tubes, small valves, MIV, etc., which are in the nature of O&M expenses have not been considered for capitalization for the purpose of tariff by this order.

14. In the light of the above, and based on the submissions of the parties and the documents available on record, the claims of the petitioner for the period 2014-19 are examined, on prudence check, as detailed in the subsequent paragraphs.

2014-15

(₹ in lakh)					
Sl. No.	Assets/ Works	Amount claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Replacement of Turbine parts for Khandong including erection & Commissioning, damaged due to acidic corrosion of reservoir water	1578.29	Till date, no acidic erosion / corrosion due to reservoir water observed in SS materials. So, it is expected that SS material will extend the life of the unit. e.g. Kopili Stage-II GV were made of SS material and commissioned in 2003. As, no acidic water impact observed in the Kopili Stage-II GV till date. Hon. CERC has already approved the items included in this Category	As the expenditure claimed is in the nature of O&M expenses and since the said expenditure for replacement of corroded components on account of acidification of reservoir water form part of the normative O&M expenses allowed to the generating station for the period 2014-19, the expenditure is not allowed.	0.00
2	Replacement of Generator components, including erection & Commissioning	912.34	Due to formation of cavity in stator in different locations and servicing 30 years, it is necessary to replace the old stator. So, the procurement was done. Materials already utilized in the machine and successfully synchronized with the grid with 25MW load w.e.f. 1.7.2014. As due to delay in supply of materials by BHEL the material could be put to commercial operation in period of 2014-15. CERC has already approved the items included in this category	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the replacement of assets was allowed vide order dated 30.9.2011 in Petition no. 297/2009 for the period 2009-14.	912.34



3	Replacement of Switch Yard spares for Khandong PS, including erection & Commissioning	45.96	As the Khandong PS is 30 years old and are equipped with MOCB of BHEL make. Now all the MOCBs are upgraded with SF6 CBs. As our existing MOCBs are obsolete and difficult to procure spares from OEM as they shifted from production of MOCB to SF6 breaker. So, the procurement was done. Material already received at site and will be utilized in 2014-15. Due to upgradation, it will provide reliability and safety of the grid. MOCB technology is obsolete now a days, Hon'ble CERC has already approved the items included in this category		45.96
4	Treatment of underwater parts like spiral casing, draft tube, embedded pipes, cones for protection from corrosion due to acidic nature of water with SS cladding by procuring SS plates or acid resistance coating.	72.01	Due to acidic nature of reservoir water, under water parts erodes severally. So, replicable parts already replaced with SS material. But embedded parts needs to protect from acidic water by providing SS plate cladding and application of anti-corrosive paint / coating. CERC already approved ₹50 lakh for 2010-11 and ₹50 lakh for 2011-12. Till date, no acidic erosion / corrosion due to reservoir water observed in SS materials. SS plates supplied vide order No. NEEPCO/KHEP/C&P(E/M)/T-166/2014-15/653 dated 23/5/14) Maintenance electrodes approximately 3000 kg procured vide several orders coatings in Spiral vide order No. NEEPCO/KHEP/C&P(E/M)/W217/KHD/ 2014-15/886 dated 3/6/14) to Ekka Press Ltd. Kolkata. Hon'ble CRCR has already approved a lumpsum amount of ₹50 lakh for treatment of	As the expenditure claimed is in the nature of O&M expenses and since the said expenditure for replacement of corroded components on account of acidification of reservoir water form part of the normative O&M expenses allowed to the generating station for the period 2014-19, the expenditure is not allowed .	0.00



			underwater components		
5	Procurement of Isolators.	10.50	The old isolators of Khandong Switch yard has completed its normal service life and is being replaced phased wise. The old isolators are creating O&M problem for last few years and it is necessary to change the same for reliable performance of the plant	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations, as the asset will facilitate the successful and efficient operation of generating station. The gross value of old asset is indicated as ₹1.00 lakh.	10.50
6	Procurement of new slip ring, Dome, Brush gear Etc. For Khandong Unit I & II	65.72	Initially Khandong had PMG type Excitation system, which has already been replaced by Static Excitation System (SEE), but the Brush gear, the PMG armature & Dome etc were unnecessarily was attached to the machine, which led to additional rotary mass, and gave rise to mechanical problems. During the year 2014-15, the total system is modified and unnecessary components removed from the unit, resulting in better performance of the machines	Not allowed as capitalization of assets after the cut-off date is not allowed for the purpose of tariff. The cost of spares has been booked to O&M on consumption.	0.00
7	New assets: Procurement of Turbine Discharge measuring instrument, Electromagnetic Flow relays etc.	36.26	Statutory requirement as per new stringent energy efficiency requirements.	Not allowed as the assets are in the nature of Tools & Tackles.	0.00
8	Procurement of Online vibration monitoring system /Carbon Dust collector etc. Including erection & Commissioning Charges Unit I & II	97.97	New technology resulting in better monitoring & safety of the units. Also is a major step toward implementation of Condition based maintenance. With the new system, balancing of the unit and other vibration related troubleshooting can be done internally, which will to cost saving and development of in-house expertise in the long run	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations, as the asset will facilitate the successful and efficient operation of the generating station.	97.97



9	Procurement of turbine oil filter machine	7.50	Due to acidic nature of reservoir water i.e. cooling water, the cooler tubes fails frequently as a result water mixed with turbine oil in the bearing housing. So, it is necessary to separate the water from oil before re-use of oil and run the unit. So, procurement of turbine oil filter m/c is required for safety of the unit during mixing of water with turbine oil. M/c already procured from Alfa-Laval and utilized at site. It will extend the life of bearing, journal housing as well as efficiency of cooling.		7.50
10	Procurement of CS/gun metal gate valves for CW system	10.79	Due to acidic nature of reservoir water i.e. cooling water, the cooling water valves fail frequently. So, it is necessary to replace the same till any alternate solution came to resolved the acidic water problem. Order already placed for procurement the same for ₹6.27 lakh. Will increase efficiency of the unit by reducing m/c outage.	As the expenditure is in the nature of O&M expenses and since the said expenditure for replacement of corroded components on account of acidification of reservoir water form part of the normative O&M expenses allowed to the generating station for the period 2014-19, the expenditure is not allowed .	0.00
11	Procurement of LA 3rd harmonic leakage current tester	8.00	As per statutory requirement from RIO to forward the leakage current value of 132KV SY LAs. Order already placed with M/s SCOPE T&D for supply the equipment. It will increase the safety of the grid by measuring leakage current and through preventive maintenance.	Not allowed as the assets are in the nature of Tools & Tackles.	0.00
12	Hydro Mechanical Works (New Works) & commissioning of Khandong Surge Shaft Gate, Kopili HE Plant, NC Hills, Umrongso, Assam	253.00	For safe and independent operation of Khandong and Kopili Stage-II power station, the installation of Surge Shaft Gates are very essential	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the works/assets have been allowed vide order dated 30.9.2011 in Petition no. 297/2009 for the period 2009-14. (i.e	253.00



				₹265.40 lakh allowed during 2009-14).	
13	Newly Instrumentation in Khandong Dam & Dyke	26.13	For day to day monitoring for safety of the structure instrumentation in the Dam is essential	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the works/assets have been allowed vide order dated 30.9.2011 in Petition no. 297/2009 for the period 2009-14. (i.e ₹45.00 lakh was allowed during 2009-14).	26.13
14	Pilot Project for remediation of Acid Mine Drainage in the Catchment of Kopili River at the upstream of Kopili Hydro Electric Plant (Khandong Dam).	66.83	For study of the Acid Mine Drainage of Kopili reservoir and its effect on the power station, the pilot project is essential.	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the works/assets have been allowed vide order dated 30.9.2011 in Petition no. 297/2009 for the period 2009-14. (i.e ₹18.00 lakh was allowed during 2009-14).	66.83
Total amount claimed		3191.31			
Total amount allowed					1420.23

2015-16

(₹ in lakh)

Sl. No	Assets/ Works	Amount claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Procurement and replacement of all existing valves of cast steel with valves made of stainless steel for Unit-I	150.00	Due to acidic nature of reservoir water, it is necessary to replaced all the CS valves with SS material. So, the procurement was done. Material already utilized in the machine and successfully synchronized with the grid w.e.f. 01-07-2014. Honorable CERC already approved Rs. 50.00 lakh for the FY 2013-14 in the tariff period 2009-14. As due to delay in procurement process utilization period spilled to 2014-19. NIT already published and procurement will be done	As the expenditure is in the nature of O&M expenses and since the said expenditure for replacement of corroded components on account of acidification of reservoir water form part of the normative O&M expenses allowed to the generating station for the period 2014-19, the expenditure is not allowed .	0.00



			shortly.		
2	Replacement of cooler tubes(70:30 Cu:Ni)	25.00	Since the acidic water is used as Cooling medium for Bearing other coolers of at Khandong Power House, The life of Cooler tubes has greatly reduced, and till commissioning of closed loop System at Khandong Power House, These cooler tubes need to be replaced annually to provide reliability to the machines , The cooler tubes last for only one year approximately, therefore, to keep the units generating, there is no alternative but to replace the cooler tubes annually till no sustainable solution is not available.		0.00
3	Replacement of 6 Nos. of 600/1 CT & PT (132 kv) and installation of the same	22.00	As per new grid standards, Khandong need to upgrade line CTs to 600/1 ratio, in place of existing 300/1, which was decided in the Operation Co-ordination Committee's 87th meeting,	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations, as the asset will facilitate the successful and efficient operation of the generating station.	22.00
4	Up-gradation of Battery bank / Charger (Planet type battery)	38.50	The existing 300 AH battery banks of Khandong Power station has already completed its stipulated life period, and the station DC being most vital component for a Power station, it is planned to upgrade the Battery bank to planet type batteries in place of conventional tubular batteries (Which is a major trend in latest power generation technology, And NEEPCO has already incorporated the same in its new plants) along with addition of capacity, as installation of new feeders and other components in the Power house has increased the load on the DC system. Recommended as per CERC norms and will enhance reliability and	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations, as the asset will facilitate the successful and efficient operation of the generating station. The gross value of old asset is indicated as ₹5.00 lakh.	38.50



			control		
5	Implementation of RGMO/FGMO enabled governing system for Khandong Unit I & II	60.00	As per new grid standards, all hydro governors need to be upgraded to RGMO/FGMO enabled mode. In this purview, an order has already been placed, and some material has been received. Statutory requirement as per grid standards and will allow more stability to grid parameters.	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations, as the asset will facilitate the successful and efficient operation of the generating station. The gross value of old asset is indicated as ₹8.00 lakh.	60.00
6	Procurement of Field coils for replacement	56.50	As the Khandong hydro units were commissioned in 1984, the field coils of the units has already completed the normal service period. Conditions of four numbers of coils are found deteriorating during testing, which need to be replaced in the next opportunity. A procurement process has already been initiated.	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset will facilitate successful and efficient operation of plant.	56.50
7	Replacement of 33 kV CT/PT	9.00	This procurement will enhance the reliability of the station supply mechanism of Khandong Power house. . Mandatory Insurance spares, without which very long outages are envisaged in case of failure	Not allowed as the assets are in the nature of spares.	0.00
8	Up-gradation of UCB for Khandong PH	75.00	This is a new item. As the Khandong PS is 30 years old and are equipped with traditional electromagnetic relays of EE make. Now the protection system is upgraded with new generation numerical relays. As our existing electromagnetic relays are obsolete and difficult to procure spares as most the relays are stopped manufacturing by the OEM. In the last tariff period of 2009-14, only ₹10 lakh has been proposed for procurement of relays, However, because of absolution of the technology,	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset will facilitate the successful and efficient operation of plant.	75.00



			it was needed to be upgraded to numerical system, and a proposal has already been initiated based on the offer from the OEM, M/S Alstom. The reason for proposing inclusion of this in additional capitalization may be summarized as, Adoption of new technology and withdrawing the components that are already obsolete and support is no longer available in the market.		
9	Procurement & installation of 28.5 MVA GT for Khandong power station	174.67	GT of Khandong Unit-I was commissioned in 08-03-1984. Since commissioning the GT fail three times during the year 1984, 1986 & 1989. In the year 1989, one LV/HV limb was replaced and since then it is in working condition. Due to above 01 no. of 28.5MVA spare GT from M/s Bharat Bijlee make was procured in 1991 which was utilized during commissioning of Kopili Stage-II unit in 2003. Recent furan analysis of oil revealed that there is deterioration of solid insulation of the transformer windings and tan-delta values of the GT is having an increasing trend. Since both the generator transformers of Khandong units exceeded the normal working life of 25 yrs and is indication of deterioration of solid insulation, there is every possibility that in case of failure of GT, the same shall not be attributable to any particular phase/winding and consequently replacement by spare HV/LV coil will not suffice. One spare 28.5MVA GT has been already procured through Open tender at a cost involvement of ₹174.00 lakh and the same is planned to be put in commercial operation during this financial year. Will increase reliability of the unit	The useful life of the asset has expired. In consideration of the submissions of the petitioner and as the asset is considered necessary for efficient operation of plant, the is allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	174.67



			and provide support to the grid, will reduce outage substantially in case of failure of one generator transformer		
10	Design, Fabrication, Supply, Erection and commissioning of Spillway Gates operated by Rope Drum Hoist, Hoist Bridge including associated Civil works required for erection of the gates in Khandong Dam of Kopili H.E.P. Umrongso, Assam	3000.00	This is a new item. On raising the FRL of Kopili Reservoir to EL.725.00m from the present level of 719.30 m by installation of Spillway gates on Khandong Dam, the plant's efficiency is likely to be improved. Also, the raising of FRL will help in mitigating flood in the Kopili River which will ultimately safeguard the downstream structures and inhabitants.	The petitioner has claimed total expenditure of ₹3897.00 lakh (₹3000.00 in 2015-16 and ₹897.00 2016-17). In response to the directions of the Commission vide ROP of the hearing dated 7.4.2015, the petitioner vide its affidavit dated 15.6.2015 has submitted that the total amount of ₹3867.00 lakh claimed was based on the estimated value of the work and subsequently during the tendering process, the agency /party has quoted rates which are below the estimated amount. Accordingly, the petitioner has finalized the tender for ₹3040.95 lakh. In view of the submissions of the petitioner and since the asset will facilitate in successful and efficient operation of plant, the expenditure of ₹3000.00 lakh in 2015-16 and the balance amount of ₹40.95 lakh is allowed in 2016-17 under Regulation 14(3)(viii) of the 2014 Tariff Regulations.	3000.00
Total amount claimed		3610.67			
Total amount allowed				3426.67	



Sl. No.	Assets/ Works	Amount claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Replacement of 1 No. Generator shaft for Khandong	160.00	Runner disc of Khandong unit II has already failed once. It is not possible to fit a new runner disc at site, for which the generator shaft has to be sent to BHEL works, which calls for a shutdown of almost one year. Again, new technology has been developed to design Generator shafts without runner disc, which is being utilized in Kopili Stage II machine. Therefore, it is intended to buy one new Generator shaft and which will be used in any unit at the earliest opportunity and the other shaft will be kept as spare after getting repaired in BHEL works. Will greatly reduce downtime in case of failure of Runner disc or any component of the Generator shaft	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset will facilitate the successful and efficient operation of plant.	160.00
2	Procurement of SS pipes for replacement of existing MS piping	10.00	Almost all pipe lines of the plant are being converted to Stainless Steel phase wise, as a requirement to counter Acidic corrosion. Will increase reliability of the plant as a whole and reduce outage due to leakages	Not allowed as the claim is in the nature of revenue expenditure and expenditure for replacement of corroded components on account of acidification of reservoir water is already a part of normative O&M expenses allowed to the station for the period 2014-19	0.00
3	Replacement of Cooler tubes (Cu:Ni 70:30)	30.00	Since the acidic water is used as Cooling medium for Bearing other coolers of at Khandong Power House, The life of Cooler tubes has greatly reduced, and till commissioning of closed loop System at		0.00



			Khandong Power House, These cooler tubes need to be replaced annually to provide reliability to the machines. The cooler tubes last for only one year approximately, therefore, to keep the units generating, there is no alternative but to replace the cooler tubes annually till no sustainable solution is not available.		
4	Installation of disaster Management system at Khandong	35.00	A hydro Power houses need to have Disaster management system basically for two purposes: 1. To protect the power house from the threats of submergence 2. Earliest restoration in case of Flooding or submergence Khandong power house doesn't have a inbuilt Disaster management system. It is of utmost necessity to establish a effective disaster management system at the plant to face any eventualities that may come in the future. Enhance reliability and squeeze down restoration time in case of flooding/ submergence, which is an anticipated hazard because of the damages on the water conductor system of the Plant by acidic water.	Allowed under Regulation 14(3) (viii) of the 2014 Tariff Regulations as the asset will facilitate the successful and efficient operation of plant.	35.00
5	Enhancing Dewatering capacity by incorporating additional Submersible pumps in dewatering system	10.00	The embedded pipings of the power house are also effected by acidic corrosion, and leakages have substantially increased during last few years due to acidic corrosion. The present dewatering system is designed to counter normal leakages in the plant, but in purview of present condition of embedded pipings, it is necessary to enhance the dewatering capacity	Allowed under Regulation 14(3) (viii) of the 2014 Tariff Regulations as the asset /work will facilitate the successful and efficient operation of plant.	10.00



			suitably to prevent disasters in the future. Increase reliability and reduces outages due to extra leakage water caused by failure of embedded parts of the plant		
6	Design, Fabrication, Supply, Erection and Commissioning of Spillway Gates operated by Rope Drum Hoist, Hoist Bridge including associated Civil works required for erection of the gates in Khandong Dam of Kopili H.E.P. Umrongso, Assam	867.00	This is a new item. On raising the FRL of Kopili Reservoir to EL.725.00m from the present level of 719.30m by installation of Spillway gates on Khandong Dam, the Plant's efficiency is likely to be improved. Also, the raising of FRL will help in mitigating flood in the Kopili River which will ultimately safeguard the downstream structures and inhabitants.	As stated earlier, expenditure of ₹3000.00 lakh for 2015-16 has been allowed. The balance amount for ₹40.95 lakh has been allowed in this year, based on the submissions of the petitioner, under Regulation 14(3)(viii) of the 2014 Tariff Regulations, as the work/asset will facilitate the successful and efficient operation of plant.	40.95
Total amount claimed		1112.00			
Total amount allowed					245.95

2017-18

(₹ in lakh)

Sl. No.	Assets/ Works	Amount claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Replacement of 2 nos. of Stainless Steel Turbine shafts for Khandong	235.00	During R&M and major overhauling of the Khandong & Kopili Stage II units, the turbine shaft of all the units are found severely damaged. Since procurement of the same was not possible within the shutdown period, the shafts were rebuilt and repaired locally and put back in use. However, these	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset will facilitate the successful and efficient operation of plant.	235.00



			being forged and manufactured and one of the very critical components of the machines, this is not advisable to run the machines with repaired shaft for long. Considering acidic nature of water, it is planned to procure stainless steel shafts so that it can withstand acidic corrosion		
2	Replacement of existing MIV of Khandong with New valve made of Stainless Steel Khandong (One No)	600.00	All MIVs of Khandong units are found to be leaking as the acidic water has caused major damages to them, because of which several outages has occurred in the last few years. In this condition, there is no other option but to replace all the MIVs will SS made ones, to prevent outages as well as any eventualities that may occur in future	The useful life of the asset has expired. In view of the justification submitted by the petitioner and as the asset will facilitate the successful and efficient operation of plant, the expenditure is allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations	600.00
3	Replacement of 132 kV CVT/PT	30.00	As per new grid standards, Khandong need to upgrade line CTs to 600/1 ratio, in place of existing 300/1, which was decided in the Operation Co-ordination Committee's 87th meeting,	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset will facilitate the successful and efficient operation of plant.	30.00
4	Up-gradation of Conductors in the Switch yard to Moose	50.00	As per norms of the Central Commission and PCC, the conductors at Khandong Switch yard need to be upgraded to Moose, as per new grid standards		50.00
5	Conversion of OFWF cooling to OFAF in generating transformers of	30.00	Failure of Generator transformer Coolers may lead to failure of transformer coils and long & Costly		30.00



	Khandong & Stage II		outages, and because of acidic nature of cooling water failure of coolers is highly likely. Conversion of Coolers to Air cooled (AFOF) from water cooled (WFOF) will eliminate the problem permanently		
6	Implementation of flow reversal system in coolers for flushing out silt/sand	10.00	New technology, will introduce online self cleaning of the coolers, thereby increasing cooling efficiency and downtime. Reduce downtime, enhance cooling and enhance life of the bearings.	Not allowed as the asset is in the nature of O&M.	0.00
Total amount claimed		955.00			
Total amount allowed					945.00

2018-19

(₹ in lakh)					
Sl. No.	Assets/ Works	Amount claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Replacement of damaged parts the stator of Khandong U# II	400.00	The old stator of Khandong Unit I was replaced by a new one, with due approval of Honorable CERC. Now the dismantled Stator is available, which may be repaired/ refurbished in Unit II, damages are already observed in Unit II stator. Will enhance the performance of the Stator, and will be able to generate desired load for next 25 years	Not allowed , as expenditure towards repair of damaged parts is in the nature of O&M expenses.	0.00



2	Up-gradation of DC distribution system	50.00	The DC distribution system of Khandong is age old and most of the components has completed its useful service life. It is planned to change /upgrade the DC distribution system of Khandong, with modern equipments and technology, as several outages has already occurred sue to failure/ Problem in the DC system of the plant . A Healthy DC system of enhance the life of the plant and reduce outage for next 10/15 years	Allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset will facilitate the successful and efficient operation of plant.	50.00
3	Closed loop cooling water system for Khandong units	650.00	Acidic water of the reservoir is being used as a cooling medium for unit, leading to frequent failure cooler tubes, tube plates, pipes & valves, leading to frequent outages of the machines. In this purview, treated water in the secondary circuit will be a sustainable solution to the issue. There are instances in many power houses affected by silt in Himalayan basin. The closed loop cooling water system has successfully solved the issue of cooler failures. Machine reliability will increase and outages due to cooling failure will be minimized. Moreover, loss of lubricating oil, (which is also an environmental issue) will be greatly reduced.		650.00
Total amount claimed		1100.00			
Total amount allowed					700.00

Additional Capital Expenditure

15. Based on the above, the additional capital expenditure allowed for the period 2014-19 is summarized as under:



	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Additional capital expenditure claimed	3191.31	3610.67	1112.00	955.00	1100.00
Additional capital expenditure allowed	1420.23	3426.67	245.95	945.00	700.00

Deletion

16. The petitioner has claimed projected de-capitalization for the period 2014-19 as under:

(₹ in lakh)		
2014-15		
Sl. No.	Name of Asset	Original value of asset
1	Turbine Spares for Khandong including erection & Commissioning	(-) 212.00
2	Procurement of set of guide vanes made of SS material along with other turbine spares for Khandong Unit-II	(-) 123.00
3	Switch Yard spares for Khandong, including erection & Commissioning	(-) 6.00
4	Procurement of Isolators 132 kV	(-) 1.00
5	Procurement of new slip ring, Dome, Brush gear etc., for Khandong Unit I & II	(-) 9.00
Total de-capitalization projected for 2014-15		(-) 351.00
2015-16		
1	Procurement and replacement of all existing valves of cast steel with valves made of stainless steel for Khandong Units	(-) 20.03
2	Procurement of cooler tubes 70:30 Cu:Ni	(-) 3.00
3	Procurement 6 Nos. of 600/1 CT & PT (132 kV) and installation of the same	(-) 3.00
4	Up-gradation of Battery bank/Charger (Planet type battery)	(-) 5.00
5	Implementation of RGMO/FGMO enabled governing system for Khandong Units I & II	(-) 8.00
6	Procurement of Field coils	(-) 8.00
7	Procurement of 33 kV CT/PT	(-) 1.00
8	Up-gradation of UCB for Khandong PH	(-) 10.00
Total de-capitalization projected for 2015-16		(-) 58.03
2016-17		
1	Spare generator shaft 1 No	(-) 22.00
2	Procurement of SS pipes	(-) 1.00
3	Procurement of Cooler tubes	(-) 4.00
Total de-capitalization projected for 2016-17		(-) 27.00
2017-18		
1	Procurement of 2 Numbers of Stainless Steel Turbine shafts for Khandong	(-) 31.00
2	Procurement of MIV made of SS for Khandong (One no)	(-) 81.00
3	Procurement of 132 kV CVT/PT	(-) 4.00
4	Up-gradation of Conductors in the Switch yard to Moose	(-) 7.00
5	Conversion of WFOF cooling to AFOF in generating transformers of Khandong & Stage II	(-) 4.00
Total de-capitalization projected for 2017-18		(-) 127.00
2018-19		
1	Procurement/Repairing of Stator of Unit II	(-) 54.00
2	Upgradation of DC distribution system	(-) 7.00
Total de-capitalization projected for 2018-19		(-) 61.00



17. Considering the fact that the capitalization of expenditure on replacement of assets i.e. the replacement of cooler tube, spares, valves, etc., is in the nature of O&M expenses, the same has not been allowed as additional capital expenditure and the corresponding deletions have been ignored for the purpose of tariff. However, it is pertinent to mention that in case any asset is de-capitalized from the books of accounts, the same would be de-capitalized for the purpose of tariff, provided that the said asset forms part of the capital base of the generating station, for the purpose of tariff. In case the petitioner is able to establish that the de-capitalized asset do not form part of the capital base for the purpose of tariff, the de-capitalization shall be ignored for the purpose of tariff. As such, the onus of establishing the fact that the de-capitalized asset do not form part of the capital base for the purpose of tariff lie with the petitioner during the process of revision of tariff of the generating station based on truing-up exercise.

18. It is observed that the petitioner has claimed expenditure of ₹174.67 lakh towards the Procurement & Installation of 28.5 MVA Generator Transformer (GT). The petitioner vide ROP of the hearing dated 7.4.2015 was directed to furnish the Reasons for the replacement of generator transformer along with details of the old asset to be removed from service as per Form 9 Bi. In response, the petitioner vide affidavit dated 15.6.2015 has submitted as below:

'The 28.5 MVA transformer is procured as spare, the new one is already installed in Khandong unit-I and the old transformer is kept as spare for the units of Khandong as well as Kopili Stage-II units. So, no old assets will be de-capitalized in this case'.

19. It is pertinent to mention that capitalization of any asset/work on replacement basis for the purpose of tariff, for a particular year is allowed if the de-capitalization of the old asset is also considered in the same year. In case the capitalization of the asset (on replacement) is allowed, the methodology of arriving at a fair value of the de-capitalized asset (wherever no gross value of old asset has been furnished) requires prominence. Accordingly, the escalation rate of 5% per annum of the value from the COD has been considered in order to work out the gross value of old asset as compared to the cost of new asset. In this background, an expenditure of (-) ₹68.50 lakh has been considered as the de-capitalized value of old GT in the



present case. The petitioner is however directed to furnish the actual value of de-capitalization of the GT at the time of revision of tariff based on truing-up in terms of Regulation 8 of the 2014 Tariff Regulations. In view of the above, the de-capitalization considered for the purpose of tariff (as against those projected by the petitioner) corresponding to the assets allowed under replacement is summarized as under:

	(₹ in lakh)					
	2014-15	2015-16	2016-17	2017-18	2018-19	Total
De-capitalization projected	(-) 351.00	(-) 58.03	(-) 27.00	(-)127.00	(-) 61.00	(-) 624.03
De-capitalization considered	(-)130.00	(-)102.50	(-) 22.00	(-)127.00	(-) 7.00	(-) 388.50

20. Based on the above discussions, the additional capital expenditure allowed for the period 2014-19 after considering de-capitalization, is summarized as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Additional capital expenditure allowed	1420.23	3426.67	245.95	945.00	700.00
De-capitalization considered	(-)130.00	(-)102.50	(-) 22.00	(-)127.00	(-) 7.00
Net Additional capital expenditure allowed	1290.23	3324.17	223.95	818.00	693.00

Capital Cost for 2014-19

21. As stated, the closing capital cost as on 31.3.2014 is ₹12438.28 lakh. The same has been considered as the opening capital cost as on 1.4.2014. Accordingly, the capital cost considered for the purpose of tariff for the period 2014-19 is as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	12438.28	13728.51	17052.68	17276.63	18094.63
Additional Capital expenditure allowed	1290.23	3324.17	223.95	818.00	693.00
Capital Cost as on 31st March of the year	13728.51	17052.68	17276.63	18094.63	18787.63

Return on Equity

22. Regulation 24 of the 2014 Tariff Regulations provides as under:

“24. Return on Equity: (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 19.



(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 the 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:

i) in case of projects commissioned on or after 1st April, 2014, an additional return of 0.50 % shall be allowed, if such projects are completed within the timeline specified in Appendix-I:

ii) the additional return of 0.5% shall not be admissible if the project is not completed within the timeline specified above for reasons whatsoever:

iii) additional RoE of 0.50% may be allowed if any element of the transmission project is completed within the specified timeline and it is certified by the Regional Power Committee/National Power Committee that commissioning of the particular element will benefit the system operation in the regional/national grid:

iv). the rate of return of a new project shall be reduced by 1% 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)/ Free Governor Mode Operation (FGMO), data telemetry, communication system up to load dispatch centre or protection system:

v) as and when any of the above requirements are found lacking in a generating station based on the report submitted by the respective RLDC, RoE shall be reduced by 1% for the period for which the deficiency continues:

vi) additional RoE shall not be admissible for transmission line having length of less than 50 kilometers.

23. Regulation 25 of the 2014 Tariff Regulations provides as under:

“Tax on Return on Equity

(1) The base rate of return on equity as allowed by the Commission under Regulation 24 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 the 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 income on other income stream (i.e., income of non generation or non transmission business, as the case may be) shall not be considered for the calculation of “effective tax rate”.

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

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

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



(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 2014-15 to 2018-19 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/DICs as the case may be on year to year basis."*

24. The Return on Equity (RoE) claimed by the petitioner is as under:

	2014-15	2015-16	2016-17	2017-18	2018-19
Base Rate	16.500%	16.500%	16.500%	16.500%	16.500%
Effective Tax Rate	20.961%	30.795%	33.990%	33.990%	33.990%
Rate of ROE (pre-tax)	20.876%	23.842%	24.996%	24.996%	24.996%

25. With regard to tax rate claimed for the purpose of grossing up of RoE, the Commission vide ROP dated 7.4.2015 directed the petitioner to submit clarification/information on the following:

"The applicable tax rate for grossing up of Return on Equity as claimed by the petitioner is Minimum Alternate Tax rate for the year 2014-15 and Corporate Tax rate for the years 2015-16 to 2018-19. Clarification/ justification for the change in applicable tax rate claimed"

26. In response, the petitioner vide affidavit dated 10.6.2015 has submitted as under:

2014-15

After availing available MAT credit during the financial year 2014-15, it is estimated that the effective tax rate applicable for NEEPCO for the FY 2014-15 is expected to be the MAT rate only and accordingly the same has been considered.

2015-16

It is estimated that the during the FY 2015-16, the balance of the MAT credit available will be exhausted resulting in the expected effective tax rate for NEEPCO considered, which is more than MAT rate but lower than corporate tax rate

2016-17 to 2018-19

It is expected that total MAT credit available will be exhausted during the FY 2015-16. Accordingly, NEEPCO will continue to paying normal corporate tax since the FY 2016-17 and accordingly, the same has been considered

27. As per Regulation, effective tax rate is to be considered on the basis of actual tax paid in the respect of the financial year. Accordingly, the tax rates as claimed by the petitioner on projection basis have not been considered for the purpose of determination of tariff. Tax Rate as applicable for 2014-15 is considered for all the years of tariff. However, the petitioner is



directed to furnish the detailed calculation of the effective tax rate, duly certified by Auditor and supported by tax audit report for the respective years, at the time of revision of tariff based on true-up exercise in terms of the 2014 Tariff Regulations. Return on Equity has been computed as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Notional Equity	6154.10	6541.17	7538.42	7605.61	7851.01
Addition due to additional capital expenditure	387.07	997.25	67.19	245.40	207.90
Closing Equity	6541.17	7538.42	7605.61	7851.01	8058.91
Average Equity	6347.63	7039.79	7572.01	7728.31	7954.96
Rate of ROE (pre-tax)	20.876%	20.876%	20.876%	20.876%	20.876%
Return on Equity	1325.11	1469.60	1580.71	1613.33	1660.65

Interest on Loan

28. Regulation 26 of the 2014 Tariff Regulations provides as under:

“26. Interest on loan capital: (1) The loans arrived at in the manner indicated in regulation 19 shall be considered as gross normative loan for calculation of interest on loan.

(2) The normative loan outstanding as on 1.4.2014 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2014 from the gross normative loan.

(3) The repayment for each of the year of the tariff period 2014-19 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 generating company or the transmission licensee, as the case may be, shall make every effort to re-finance the loan as long as it results in net savings on interest



and in that event the costs associated with such re-financing shall be borne by the beneficiaries and the net savings shall be shared between the beneficiaries and the generating company or the transmission licensee, as the case may be, in the ratio of 2:1.

(8) The changes to the terms and conditions of the loans shall be reflected from the date of such re-financing.

(9) In case of dispute, any of the parties may make an application in accordance with the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999, as amended from time to time, including statutory re-enactment thereof for settlement of the dispute:

Provided that the beneficiaries or the long term transmission customers /DICs shall not withhold any payment on account of the interest claimed by the generating company or the transmission licensee during the pendency of any dispute arising out of re-financing of loan.”

29. Since the actual loan has been repaid in the year 2010-11, the weighted average rate of interest on loan for the said year i.e 7.940% has been considered for the years 2014-15, 2015-16 and 2016-17. Based on this, the Interest on loan during the period 2014-19 is worked out and allowed as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Normative Loan	6284.18	7187.34	9514.26	9671.03	10243.63
Cumulative Repayment upto Previous Year	6284.18	6874.08	7598.63	8386.62	9089.02
Net Loan-Opening	-	313.26	1,915.63	1284.41	1154.60
Repayment during the year	589.90	724.55	787.99	702.40	559.35
Addition due to Additional Capitalization	903.16	2326.92	156.77	572.60	485.10
Net Loan-Closing	313.26	1915.63	1284.41	1154.60	1080.35
Average Loan	156.63	1114.44	1600.02	1219.51	1117.48
Weighted Average Rate of Interest on Loan	7.940%	7.940%	7.940%	7.940%	7.940%
Interest on loan	12.44	88.49	127.04	96.83	88.73

Depreciation

30. Regulation 27 of the 2014 Tariff Regulations provides as under:

“27. Depreciation: (1) Depreciation shall be computed from the date of commercial operation of a generating station or unit thereof or a transmission system including communication system or element thereof. 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 or elements thereof.

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 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 in case of hydro generating station, the salvage value shall be as provided in the agreement signed by the developers with the State Government for development of the Plant:

Provided further 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 generating unit or transmission system as the case may be, shall not be allowed to be recovered at a later stage during the useful life and 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-II** 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 1.4.2014 shall be worked out by deducting the cumulative depreciation as admitted by the Commission upto 31.3.2014 from the gross depreciable value of the assets.

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

(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.”

31. The COD of generating station is 4.5.1984. The generating station has completed 12 years of operation as on 4.5.1996. And accordingly, the spread over of depreciation commenced. With the COD of the generating station being 4.5.1984, the useful life of the station (35 years) will expire on 30.4.2019.



32. The station at present is in the fag end of its life, and the petitioner has proposed to incur additional capital expenditure during this period i.e. 2014-19. In absence of any information for the proposed life extension vide Regulation 27 (7), the depreciation on additional capitalization as allowed for the period 2014-19 has been considered separately by allowing depreciation at the rate of 5.28% as per the rates in Appendix-II of the 2014 Regulation. Similar view was taken by the Commission in the order dated 9.8.2012 in petition no. 225-2009 in the matter of tariff determination of Singrauli Super Thermal Power Station, as below:

51. We have given a serious thought on this issue. Since these assets are being capitalized during the terminal year of the generating station, we are of the view that allowing 90% of the depreciation would not be in the interest of the beneficiaries and therefore these assets should be depreciated at the rates specified in Appendix-III of the 2009 Tariff Regulations. The petitioner has not indicated the period for which the life of the generating station would be extended beyond its useful life. In the absence of the said information, the Commission cannot decide as to how the expenditure incurred on DAETP and Ash water recirculation system during the terminal year of the life of the generating station would be serviced in tariff. Therefore, the Commission considers it appropriate to allow the depreciation of the assets capitalized during the terminal year as per the rate specified in Appendix-III of the 2009 Tariff Regulations. The petitioner would be required to run the generating station for sufficiently longer period to recover the full depreciation of the said assets. This will be in the interest of the beneficiaries as they will not be overburdened with payment of admissible depreciation during the terminal year of the generating station.

33. According to the methodology set by the Commission in the above quoted order, the depreciation on the additional capitalisation in the instant case also is being allowed in the similar manner, i.e. as per the rates in Appendix-III of the 2009 Regulation. However, for the original gross block depreciable value as on 1.4.2014, the depreciation has been allowed in the regular manner i.e. by spreading over the balance useful life. Accordingly, the depreciation has been computed as follows:

(₹ in lakh)

			2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation on the original Gross Block (i.e. without considering the additional capitalisation)							
Gross Block as on 31.3.2014		12438.28	12438.28	12438.28	12438.28	12438.28	12438.28
Additional capitalisation (considered nil)			-	-	-	-	-
Closing Gross block			12438.28	12438.28	12,438.28	12438.28	12438.28
Average gross block			12438.28	12438.28	12,438.28	12438.28	12438.28
land related cost			176.00	176.00	176.00	176.00	176.00
Depreciable Value	90%		11036.05	11036.05	11036.05	11036.05	11036.05
Balance Useful life of the asset	5.09		5.09	4.09	3.09	2.09	1.09



Remaining Depreciable Value			2830.16	2326.79	1664.66	889.68	264.62
Depreciation on the original gross block (A)			555.84	568.67	538.43	425.34	242.40
Depreciation on the additional capitalisation							
Opening value			0.00	1290.23	4614.40	4838.35	5656.35
Additional capitalisation during the year			1290.23	3324.17	223.95	818.00	693.00
Closing value			1290.23	4614.40	4838.35	5656.35	6349.35
Average			645.12	2952.32	4726.38	5247.35	6002.85
Rate of depreciation			5.28%	5.28%	5.28%	5.28%	5.28%
Depreciation on the additional capitalisation (B)			34.06	155.88	249.55	277.06	316.95
Depreciation on the entire gross block (incl. additional capitalisation) (A+B)			589.90	724.55	787.99	702.40	559.35
Adjustment on account of decapitalised assets			(-)86.54	(-)62.41	(-)13.00	(-)77.35	(-)4.30
Adjusted Cumulative Depreciation/ Advance against Depreciation after taking into account the pro-rata adjustment of decapitalized assets	8205.89		8709.26	9371.40	10146.38	10771.43	11326.48

Operation & Maintenance Expenses

34. Regulation 29 (3) (a) of the 2014 Tariff Regulations provides as under:

29. Operation and Maintenance Expenses:

(3) Hydro Generating Station

(a) Following operations and maintenance expense norms shall be applicable for hydro generating stations which have been operational for three or more years as on 01.04.2014:

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
1233.87	1317.89	1405.45	1498.82	1598.41

35. The petitioner has claimed the O&M expenses as per the above norms. The generating station is in operation for three or more years as on 1.4.2014. Accordingly, in terms of sub-section (a) of clause (3) of Regulation 29 of the 2014 Tariff Regulations, the year-wise O&M expense norms claimed by the petitioner as above is allowed for the period 2014-19.



Interest on working capital

36. Sub-section (c) of Clause (1) of Regulation 28 of the 2014 Tariff Regulations provides as under:

28. Interest on Working Capital:

(1) *The working capital shall cover*

(a) *Hydro generating station including pumped storage hydro electric generating Station and transmission system including communication system:*

(i) *Receivables equivalent to two months of fixed cost;*

(ii) *Maintenance spares @ 15% of operation and maintenance expense specified in regulation 29; and*

(iii) *Operation and maintenance expenses for one month.*

37. Clause (3) of Regulation 28 of the 2014 Tariff Regulations provides that the rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2014 or as on 1st April of the year during the tariff period 2014-15 to 2018-19 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.

38. Accordingly, receivables equivalent to two months of fixed cost is allowed as under:

<i>(₹ in lakh)</i>				
2014-15	2015-16	2016-17	2017-18	2018-19
545.64	620.98	672.71	674.95	674.76

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

<i>(₹ in lakh)</i>				
2014-15	2015-16	2016-17	2017-18	2018-19
185.08	197.68	210.82	224.82	239.76

40. O&M Expenses for one month is worked out and allowed as under:

<i>(₹ in lakh)</i>				
2014-15	2015-16	2016-17	2017-18	2018-19
102.82	109.82	117.12	124.90	133.20

41. In terms of the above regulations, Bank Rate of 13.50% (Base Rate + 350 Basis Points) as on 1.4.2014 claimed by the petitioner has been considered in the calculations for working capital.



42. Necessary computations in support of interest on working capital are as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Maintenance Spares	185.08	197.68	210.82	224.82	239.76
O & M expenses	102.82	109.82	117.12	124.90	133.20
Receivables	545.64	620.98	672.71	674.95	674.76
Total	833.54	928.49	1,000.65	1,024.68	1,047.73
Interest on Working Capital @13.50%	112.53	125.35	135.09	138.33	141.44

43. Accordingly, the annual fixed charges allowed for the generating station for the period from 1.4.2014 to 31.3.2019 is summarized as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Return on Equity	1325.11	1469.60	1580.71	1613.33	1660.65
Interest on Loan	12.44	88.49	127.04	96.83	88.73
Depreciation	589.90	724.55	787.99	702.40	559.35
Interest on Working Capital	112.53	125.35	135.09	138.33	141.44
O & M Expenses	1233.87	1317.89	1405.45	1498.82	1598.41
Annual Fixed Charges	3273.85	3725.87	4036.27	4049.72	4048.58

Normative Annual Plant Availability Factor

44. Clause (4) of Regulation 37 of the 2014 Tariff Regulations provides for the Normative Annual Plant Availability Factor (NAPAF) for hydro generating stations already in operation. Accordingly, the NAPAF of 69% has been considered for this generating station.

Design Energy

45. The Commission in its order dated 30.9.2011 in Petition No.297/2009 had approved the annual Design Energy (DE) of 227.61 Million units for the period 2009-14 in respect of this generating station. This DE has been considered for this generating station for the period 2014-19 as per month-wise details as under:

Month	Design Energy (MUs)
April	10.08
May	37.21
June	36.00
July	37.20
August	37.20
September	36.00
October	33.23
November	10.03
December	10.42



January	10.42
February	9.40
March	10.42
Total	227.61

Enhancement of O&M expenses

46. The petitioner in the petition has submitted that the salary & wages of the employees of the petitioner will be due from 1.1.2017. It has further submitted that the petition has been submitted considering the O&M expenses in terms of Regulation 29(3)(a) of the 2014 Tariff Regulations and the yearly escalation provided in the O&M expenses may not cover the enhanced employee cost due to the aforesaid pay revision. Accordingly, the petitioner has sought liberty to approach the Commission for seeking enhancement in the O&M expenses with effect from 1.1.2017 due to pay revision, if any, under Regulation 54 and 55 of the 2014 Tariff Regulations. The matter has been examined. On this issue, the Commission in the Statement of Reasons to the 2014 Tariff Regulations has observed as under:

“29.26 Some of the generating stations have suggested that the impact of pay revision should be allowed on the basis of actual share of pay revision instead of normative 40% and one generating company suggested that the same should be considered as 60%. In the draft Regulations, the Commission had provided for a normative percentage of employee cost to total O&M expenses for different type of generating stations with an intention to provide a ceiling limit so that it does not lead to any exorbitant increase in the O&M expenses resulting in spike in tariff. The Commission would however, like to review the same considering the macro economics involved as these norms are also applicable for private generating stations. In order to ensure that such increase in employee expenses on account of pay revision in case of central generating stations and private generating stations are considered appropriately, the Commission is of the view that it shall be examined on case to case basis, balancing the interest of generating stations and consumers”

47. Accordingly, the prayer of the petitioner for enhancement of O&M expenses if any, due to pay revision may be examined by the Commission, on a case to case basis, subject to the implementation of pay revision as per DPE guidelines and the filing of an appropriate application by the petitioner in this regard.

Application Fee and Publication Expenses

48. The petitioner has sought the reimbursement of filing fee and also the expenses incurred towards publication of notices for application of tariff for the period 2014-19. The petitioner has deposited the filing fees for the period 2014-19 in terms of the provisions of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012. The



petitioner has incurred charges towards publication of the said tariff petition in the newspapers. Accordingly, in terms of Regulation 52 of the 2014 Tariff Regulations and the decision of the Commission in order dated 6.1.2016 in Petition No.232/GT/2014, the petitioner is entitled to recover the filing fees and the expenses incurred on publication of notices for the period 2014-19 directly from the respondents. Accordingly, the expenses incurred by the petitioner towards tariff application filing fees and publication of notices in connection with the present petition shall be directly recovered from the respondent beneficiaries on pro rata basis.

49. The annual fixed charges approved as above for the period 2014-19 as above are subject to truing-up in terms of Regulation 8 of the 2014 Tariff Regulations.

50. Petition No. 42/GT/2015 is disposed of in terms of the above.

-Sd/-
(A.S. Bakshi)
Member

-Sd/-
(A.K.Singhal)
Member

-Sd/-
(Gireesh B.Pradhan)
Chairperson

