**CENTRAL ELECTRICITY REGULATORY COMMISSION**
**NEW DELHI**

**Petition No. 45/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: 22.02.2016**

**IN THE MATTER OF**

Approval of tariff of Kopili Stage-II Hydroelectric Power Plant (25 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 Power Distribution 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
Dongtieh, 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

**ORDER**

This petition has been filed by the petitioner, North Eastern Electric Power Corporation Ltd (NEEPCO) for approval of tariff of Kopili Stage-II Hydro Electric Project (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. The Kopili Hydro Electric Project comprises of three power stations, namely Khandong Power Station (2 x 25 MW), Kopili Power Station (4 x 50 MW) and Kopili Stage II Power Station (1 x 25 MW). Initially, the project was of the capacity of 150 MW i.e. (2 x 25 MW) in Khandong Power Station and (2 x 50 MW) in Kopili Power Station. Thereafter, a capacity of (2 x 50 MW) was added to Kopili Power Station as KHEP Stage-I Extension. In addition to this, 1 x 25 MW Kopili Stage II Power station was added to the project with date of commissioning as 26.7.2004. The Stage-I of the project had been executed keeping in view the maximum benefit to be derived in future from the built in civil works. The project comprises of two concrete dam, viz, Khandong Dam and Umrong Dam and two corresponding reservoirs with two separate

water conductor systems and two power houses, namely, Khandong power Station and Kopili Power Station. Khandong Dam is across the river Kopili, which is a perennial river. Water from this reservoir is diverted through a tunnel of diameter 4.5 meters and length of 2.76 km to the Khandong Power House (2 x 25 MW). Umrong Dam is across a small tributary of the river Kopili, called Umrong, which has a very less discharge during the lean season. The tail race discharge from Khandong Power Station is diverted to Umrong reservoir through an open channel and water from this reservoir is diverted through a channel of diameter 4.5 meter and a length of 5.5 km to Kopili Power Station ( 4 x 50 MW) located on the bank of river Kopili on downstream side.

3. The date of commercial operation of the generating station is 26.7.2004. The scope of works of the generating station includes the construction of an additional power house and a by-pass tunnel of 275 meter length. The by-pass tunnel bifurcates from the main tunnel just beyond the surge-shaft for which boring was done at the time of construction of Kopili HEP Stage I.

4. The tariff of the generating station for the period 2009-14 was determined by Commission’s order dated 23.1.2012 in Petition No.298/2009 based on capital cost of ₹12194.00 lakh as on 1.4.2009. Subsequently, by Commission’s order dated 18.9.2015 in Petition No.455/GT/2014 revised the tariff of the generating station for the period 2009-14 after truing-up of the capital expenditure including the additional capital expenditure incurred during the period 2009-14. Accordingly, the annual fixed charges approved by the Commission vide order dated 18.9.2015 is as under:

***(₹in lakh)***

| | **2009-10** | **2010-11** | **2011-12** | **2012-13** | **2013-14** |
|---|---|---|---|---|---|
| Return on Equity | 458.16 | 474.96 | 475.42 | 484.17 | 514.50 |
| Interest on Loan | 215.56 | 185.50 | 155.45 | 126.39 | 97.26 |
| Depreciation | 378.48 | 378.48 | 378.48 | 379.33 | 380.18 |
| Interest on Working Capital | 33.39 | 34.40 | 34.51 | 34.88 | 35.73 |
| O & M Expenses | 241.00 | 254.79 | 269.36 | 284.77 | 301.06 |
| **Total** | **1327.18** | **1328.13** | **1313.22** | **1309.54** | **1328.74** |

5. As stated, the petitioner 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 | 385.05 | 401.27 | 413.49 | 424.87 | 95.87 |
| Interest on Loan | 91.46 | 85.03 | 68.64 | 49.75 | 55.51 |
| Return on Equity | 548.76 | 653.12 | 705.58 | 725.00 | 744.76 |
| Interest on Working Capital | 41.33 | 45.14 | 47.51 | 49.12 | 43.56 |
| O & M Expenses | 321.00 | 342.33 | 365.07 | 389.32 | 415.19 |
| **Total** | **1387.60** | **1526.89** | **1600.28** | **1638.06** | **1354.89** |

6. 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 some additional information, reserved its orders in the petition. Based on the submissions of the parties and the documents available on record, we proceed to determine the tariff of the generating station for the period 2014-19 on prudence check, 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 18.9.2015 in Petition No.455/GT/2014 had approved the closing capital cost of ₹8215.32 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.

10. 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 obsolesce 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."*

11. 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** |
|---|---|---|---|---|---|
| Projected additional capital expenditure claimed on gross basis | 264.10 | 560.00 | 5.00 | 725.00 | 20.00 |
| De-capitalization | (-) 77.00 | (-) 9.00 | (-) 0.00 | (-) 212.00 | (-) 6.00 |
| **Net additional capital expenditure claimed** | **187.10** | **551.00** | **5.00** | **513.00** | **14.00** |

**figures rounded off to the nearest value*

12. 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 top cover for Stage II with new one made of stainless steel | 170.94 | Due to acidic nature of reservoir water, it is necessary to replace all the MS underwater parts with SS material. So, the | Considering the operational difficulties faced by the plant due to acidic nature of water, the replacement of this asset | **119.94** (170.94-51.00) |

| | | | | | |
|---|---|---|---|---|---|
| | (SS) | | procurement was done. Material already utilized in the machine and successfully synchronized with the grid w.e.f. 16.6.2014. The respondent, APDCL has submitted that the life period of the machineries is only ten years (COD of 26.7.2004) and the Commission may examine. | is allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations. The gross value of old asset is indicated as ₹51.00 lakh which is considered. | |
| 2 | Replacement of pivot ring for Stage II with new one made of stainless steel (SS) | 86.16 | | Considering the operational difficulties faced by the plant due to acidic nature of water, the replacement of this asset is allowed under Regulation 14(3)(viii) of the 2014 Tariff Regulations. The gross value of old asset is indicated as ₹26.00 lakh which is considered. | **60.16** (86.16-26.00) |
| 3 | Up-gradation of Governing System to enable RGMO/FGMO mode of operation | 7.00 | 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)(ii) of the 2014 Tariff Regulations, as the asset will meet the requirement of regulatory compliance under Change in law and will facilitate the successful and efficient operation of plant. | **7.00** |
| **Total amount claimed** | | **264.10** | | | |
| **Total amount allowed** | | | | | **187.10** |

**2015-16**

*(₹in lakh)*

| Sl. No | Assets/ Works | Amount claimed | Justification submitted by the petitioner | Remarks on admissibility | Amount Allowed |
|---|---|---|---|---|---|
| 1 | Replacement of Battery bank/ refurbishment of battery Charger (Planet type battery) | 30.00 | The existing 300 AH battery banks of Kopili-II 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 plant 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 | Considering the fact that the asset is necessary for safe and efficient operation of the plant, replacement of the asset is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations. The gross value of old asset is indicated as ₹9.00 lakh which has been considered. | **21.00** (30.00-9.00) |

| | | | | | |
|---|---|---|---|---|---|
| | | | other components in the Power house has increased the load on the DC system. The respondent, APDCL has submitted that the Commission may examine and decide | | |
| 2 | Closed loop cooling water System for Kopili stage II PH | 530.00 | 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 effected by silt in Himalayan basin. 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. The respondent, APDCL has submitted that the Commission may examine and decide. | Considering the operational difficulties faced by the plant due to acidic nature of water, the replacement of this asset is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations. | **530.00** |
| **Total amount claimed** | | **560.00** | | | |
| **Total amount allowed** | | | | | **551.00** |

**2016-17**

*(₹in lakh)*

| Sl. No. | Assets/ Works | Amount claimed | Justification submitted by the petitioner | Remarks on admissibility | Amount Allowed |
|---|---|---|---|---|---|
| 1 | Enhancing Dewatering capacity using Submersible pumps | 5.00 | The embedded pipings of the power house are also affected 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 suitably to prevent | Considering the operational difficulties faced by the plant due to acidic nature of water, the replacement of this asset is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations. | **5.00** |

| | | | | | |
|---|---|---|---|---|---|
| | | | disasters in the future. The respondent, APDCL has submitted that the Commission may examine and decide. | | |
| **Total amount claimed** | | **5.00** | | | |
| **Total amount allowed** | | | | | **5.00** |

**<u>2017-18</u>**

*(₹in lakh)*

| Sl. No. | Assets/ Works | Amount claimed | Justification submitted by the petitioner | Remarks on admissibility | Amount Allowed |
|---|---|---|---|---|---|
| 1 | Replacement of 1 Numbers of Turbine shaft Kopili Stage II machine, with a new shaft made of SS | 120.00 | During R&M and major overhauling of the Khandong & Kopili Stage II units, the turbine shaft of all the units is 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 being forge 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. The respondent, APDCL has submitted that the Commission may examine and decide. | Considering the fact that the asset is necessary for safe and efficient operation of the plant, replacement of the asset is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations. The gross value of old asset is indicated as. The gross value of old asset is indicated as ₹35.00 lakh which has been considered. | **85.00** (120.00-35.00) |
| 2 | Replacement of MIV with new one made of SS for Kopili Stage II machine | 600.00 | All MIVs of Khandong and Kopili Stage II 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 | Considering the fact that the asset is necessary for safe and efficient operation of the plant, replacement of the asset is **allowed** under Regulation 14(3)(viii) of the 2014 Tariff Regulations. The gross value of old asset is indicated as. The gross value of old asset is indicated as ₹177.00 lakh which has been | **423.00** (600.00-177.00) |

| | | | | | |
|---|---|---|---|---|---|
| | | | 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. | considered. | |
| 3 | Implementation of flow reversal system in coolers for flushing out silt/sand | 5.00 | 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 | 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. | **5.00** |
| **Total amount claimed** | | **725.00** | | | |
| **Total amount allowed** | | | | | **513.00** |

**<u>2018-19</u>**

***(₹in lakh)***

| Sl. No. | Assets/ Works | Amount claimed | Justification submitted by the petitioner | Remarks on admissibility | Amount Allowed |
|---|---|---|---|---|---|
| 1 | Up-gradation of DC distribution system | 20.00 | The DC distribution system of Kopli-II is age old and most of the components has completed its useful service life. It is planned to change /upgrade the DC distribution system, 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. The respondent, APDCL has submitted that the Commission may examine and decide. | 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. The gross value of the old asset is indicated as ₹6.00 which has been considered. | **14.00** (20.00-6.00) |
| **Total amount claimed** | | **20.00** | | | |
| **Total amount allowed** | | | | | **14.00** |

13. Accordingly, the net 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 | 264.10 | 560.00 | 5.00 | 725.00 | 20.00 |
| De-capitalization considered | (-) 77.00 | (-) 9.00 | 0.00 | (-) 212.00 | (-) 6.00 |
| **Net Additional capital expenditure allowed** | **187.10** | **551.00** | **5.00** | **513.00** | **14.00** |

**Capital Cost for 2014-19**

14. As stated, the closing capital cost as on 31.3.2014 is ₹8215.32 lakh and 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 | 8215.32 | 8402.42 | 8953.42 | 8958.42 | 9471.42 |
| Admitted additional capital expenditure | 187.10 | 551.00 | 5.00 | 513.00 | 14.00 |
| **Capital cost as on 31st March of the year** | **8402.42** | **8953.42** | **8958.42** | **9471.42** | **9485.42** |

**Return on Equity**

15. 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) additionalRoE 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.*

16. 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:*

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

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

*(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."*

17. 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% |

18. 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"*

19. 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."*

20. In terms of the said Regulation, effective tax rate is required 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. The tax rate as applicable for 2014-15 is considered for all the years of the tariff period. 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 truing-up exercise in terms of Regulation 8 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 | 2464.59 | 2520.72 | 2686.02 | 2687.52 | 2841.42 |
| Addition due to additional capital expenditure | 56.13 | 165.30 | 1.50 | 153.90 | 4.20 |
| **Closing Equity** | 2520.72 | 2686.02 | 2687.52 | 2841.42 | 2845.62 |
| Average Equity | 2492.66 | 2603.37 | 2686.77 | 2764.47 | 2843.52 |
| Return on Equity (Base Rate ) | 16.500% | 16.500% | 16.500% | 16.500% | 16.500% |
| Effective Tax rate for the year | 20.961% | 20.961% | 20.961% | 20.961% | 20.961% |

| | | | | | |
|---|---|---|---|---|---|
| Rate of Return on Equity | 20.876% | 20.876% | 20.876% | 20.876% | 20.876% |
| Return on Equity | **520.36** | **543.47** | **560.88** | **577.10** | **593.60** |

**Interest on Loan**

21. 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."*

22. The actual loan pertaining to the generating station has already been repaid. Weighted rate of interest @ 7.94% as considered in order dated 18.9.2015 in Petition No. 455/GT/2014 has been considered in this order. As such, interest on the normative loan for the generating station is computed as under:

*(₹in lakh)*

| | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|---|---|---|---|---|---|
| Gross Normative Loan | 5750.73 | 5881.70 | 6267.40 | 6270.90 | 6630.00 |
| Cumulative Repayment upto Previous Year | 4715.79 | 5082.23 | 5467.92 | 5868.11 | 5980.21 |
| Net Loan-Opening | 1034.94 | 799.47 | 799.48 | 402.79 | 649.79 |
| Repayment during the year | 366.44 | 385.68 | 400.19 | 112.10 | 129.47 |
| Addition due to Additional Capitalization | 130.97 | 385.70 | 3.50 | 359.10 | 9.80 |
| Net Loan-Closing | 799.47 | 799.48 | 402.79 | 649.79 | 530.12 |
| Average Loan | 917.20 | 799.48 | 601.14 | 526.29 | 589.95 |
| Weighted Average Rate of Interest on Loan | 7.940% | 7.940% | 7.940% | 7.940% | 7.940% |
| **Interest on loan** | **72.83** | **63.48** | **47.73** | **41.79** | **46.84** |

**Depreciation**

23. 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."*

24. The COD of the generating station is 26.7.2004. As such, the generating station shall complete 12 years of operation in the year 2016-17. Hence, depreciation till the year 2016-17 is charged at the rates specified in Appendix-II to the 2014 regulations and the remaining depreciable value has been spread over the balance useful life of the assets. It is observed that the petitioner has claimed the depreciation as per the rates till the year 2017-18, which is found incorrect and not considered. The petitioner has claimed the weighted average rate of depreciation of 4.402% for the years 2014-15, 2015-16, 2016-17 and 2017-18. Accordingly, in terms of the 2014 Tariff Regulations, depreciation has been worked out as follows:

***(₹in lakh)***

| | **2014-15** | **2015-16** | **2016-17** | **2017-18** | **2018-19** |
|---|---|---|---|---|---|
| Opening Gross block | 8215.32 | 8402.42 | 8953.42 | 8958.42 | 9471.42 |
| Additional capital expenditure during 2014-19 | 187.10 | 551.00 | 5.00 | 513.00 | 14.00 |
| Closing gross block | 8402.42 | 8953.42 | 8958.42 | 9471.42 | 9485.42 |

| | | | | | |
|---|---|---|---|---|---|
| Average gross block | 8308.87 | 8677.92 | 8955.92 | 9214.92 | 9478.42 |
| Depreciable Value | 7477.98 | 7810.13 | 8060.33 | 8293.43 | 8530.58 |
| Balance Useful life of the asset | 25.30 | 24.30 | 23.30 | 22.30 | 21.30 |
| Remaining Depreciable Value | 2784.71 | 2796.87 | 2666.98 | 2499.89 | 2757.75 |
| **Depreciation** | **366.44** | **385.68** | **400.19** | **112.10** | **129.47** |

**Operation & Maintenance Expenses**

25. Sub-clause (a) of Clause (3) of Regulation 29 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 1.4.2014:*

***(₹in lakh)***

| 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|---|---|---|---|---|
| 321.00 | 342.33 | 365.07 | 389.32 | 415.19 |

26. The generating station is in operation for three or more years as on 1.4.2014 and the petitioner has claimed O&M expenses as per norms specified under the said regulations. Accordingly, in terms of the above regulations, the year-wise O&M expense norms claimed by the petitioner are allowed for the period 2014-19.

**Interest on working capital**

27. 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."*

28. 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.

29. Receivables equivalent to two months of fixed cost is allowed as under:

*(₹in lakh)*

| 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|---|---|---|---|---|
| 220.07 | 229.45 | 236.21 | 193.11 | 204.29 |

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

*(₹ in lakh)*

| 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|---|---|---|---|---|
| 48.15 | 51.35 | 54.76 | 58.40 | 62.28 |

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

*(₹ in lakh)*

| 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|---|---|---|---|---|
| 26.75 | 28.53 | 30.42 | 32.44 | 34.60 |

32. 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. 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 | 48.15 | 51.35 | 54.76 | 58.40 | 62.28 |
| O & M expenses | 26.75 | 28.53 | 30.42 | 32.44 | 34.60 |
| Receivables | 220.07 | 229.45 | 236.21 | 193.11 | 204.29 |
| Total | 294.97 | 309.33 | 321.39 | 283.95 | 301.17 |
| **Interest on Working Capital @13.50%** | **39.82** | **41.76** | **43.39** | **38.33** | **40.66** |

33. 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 | 520.36 | 543.47 | 560.88 | 577.10 | 593.60 |
| Interest on Loan | 72.83 | 63.48 | 47.73 | 41.79 | 46.84 |
| Depreciation | 366.44 | 385.68 | 400.19 | 112.10 | 129.47 |
| Interest on Working Capital | 39.82 | 41.76 | 43.39 | 38.33 | 40.66 |
| O & M Expenses | 321.00 | 342.33 | 365.07 | 389.32 | 415.19 |
| **Total** | **1320.45** | **1376.72** | **1417.26** | **1158.64** | **1225.77** |

**Normative Annual Plant Availability Factor**

34. 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, NAPAF of 69% has been considered for this generating station.

**Design Energy**

35. Clause (4) of Regulation 37 of the 2014 Tariff Regulations provides for the Normative Annual Availability Factor (NAPAF) for hydro generating stations already in operation. The Commission in its order dated 23.1.2012 in Petition No.298/2009 had approved the annual Design Energy (DE) of 86.30 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 | 0.72 |
| May | 14.88 |
| June | 17.28 |
| July | 18.60 |
| August | 18.60 |
| September | 15.95 |
| October | 0.27 |
| November | 0.00 |
| December | 0.00 |
| January | 0.00 |
| February | 0.00 |
| March | 0.00 |
| **Total** | **86.30** |

**Enhancement of O&M expenses**

36. The petitioner in the petition has submitted that the salary & wages of the employees of the petitioner will be due for increase 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. Similar prayer of the petitioner was considered by the Commission in Petition No.43/GT/2015 (tariff of Doyang HEP for 2014-19) and the Commission vide its order dated 13.1.2016 has observed as under:

> *"42. Accordingly, the prayer of the petitioner for enhancement of O&M expenses if any, due to pay revision maybe 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."*

The prayer of the petitioner in the present case is disposed of accordingly in terms of the above.

**Application Fee and Publication Expenses**

37. 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 of Rs 1,10,000/- for the period 2014-15 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 in line with the decision in Commission's order dated 5.1.2016 in Petition No. 232/GT/2014, the petitioner shall be entitled to recover the filing fees and the expenses incurred on publication of notices for the period 2014-15 directly from the respondents pro rata on submission of documentary proof. The filing fees for the remaining years of the tariff period 2015-19 shall be recovered *pro rata* after deposit of the same and production of documentary proof.

38. 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.

39. Petition No. 45/GT/2015 is disposed of in terms of the above.

| Sd/- | Sd/- | Sd/- |
|---|---|---|
| **(A.S. Bakshi)** | **(A.K.Singhal)** | **(Gireesh B. Pradhan)** |
| **Member** | **Member** | **Chairperson** |