

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 15/GT/2018

Coram:

**Shri P. K Pujari, Chairperson
Shri A. K. Singhal, Member
Dr. M. K. Iyer, Member**

Date of Hearing: 8.8.2018

Date of Order: 9.10.2018

In the matter of

Approval of tariff of Tuirial hydro Electric Power Plant (60 MW) of North Eastern Electric Power Corporation Limited for the period from COD to 31.03.2019.

And

In the matter of

North Eastern Electric Power Corporation Limited,
Brookland Compound, Lower New Colony,
Shillong -793003, Meghalaya.

.....PETITIONER

VS

1. The Engineer-in-Chief,
Power & Electricity Department,
Government of Mizoram, Kawlpetha,
New Secretariat Complex,
Aizawl – 796005
2. The Member Secretary,
North Eastern Regional Power Committee,
NERPC Complex, Dong Parmaw,
Lapalang, Shillong – 793006
3. The Executive Director,
North Eastern Regional Load Despatch Centre,
Dongtieh, Lower Nongrah,
Lapalang,
Shillong – 793006.

...RESPONDENTS



Parties present:

For Petitioner: Shri M.G. Ramachandran, Advocate, NEEPCO
Ms. Ranjitha Ramachandran, Advocate, NEEPCO
Ms. Anushree Bardhan, Advocate, NEEPCO
Ms. Debjani Dey, NEEPCO
Ms. E. Pyrbot, NEEPCO

For Respondents: Shri Benjamin L. Tlumtea, P&ED

ORDER

This petition has been filed by the petitioner, NEEPCO for approval of tariff of Tuirial Hydro Electric Power Plant (2 X 30 MW) for the period from COD to 31.03.2019 in terms of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as “the 2014 Tariff Regulations”).

2. NEEPCO has set up the Tuirial Hydro Electric Project (TrHEP) located in the Kolasib District of Mizoram to harness the power from the river Tuirial. The DPR for the project was prepared by Central Water Commission in 1991 and techno-economic clearance (TEC) was granted for execution of the project. The Government of Mizoram initiated discussion with the then Japan Bank for International Cooperation (JBIC) (earlier Overseas Economic Cooperation Fund - OECF) for availing the debt component of the project in order to execute the project under State sector. JBIC expressed its inability to fund the project under the State sector. Consequently, the Ministry of Power, Govt. of India, in consultation with the Government of Mizoram, invited NEEPCO to undertake the project under Central sector in the early part of 1996 and accordingly an MOU was signed between the Govt. of Mizoram and NEEPCO in May, 1996. NEEPCO took up the work of Pre-construction Survey and development of infrastructure immediately after taking over



the project in 1996. The original CCEA clearance of the project was accorded on 16th July, 1998 at an estimated cost of ₹368.72 crore with a completion schedule of 8 years.

3. The project works commenced in 2001 as per drawn up plan and was progressing. However, the project works came to a halt from June, 2004 due to agitation launched by Tuirial Crop Compensation Claimant Association claiming payment of crop compensation for the standing crops in the Riverine Reserve Forest and the project works were suspended due to the law & order problem. Prior to suspension of work, 30% of the project work and 95% of Design & Engineering work were completed.

4. Under the support of the Govt. of Mizoram, the project revival was initiated and Public Investment Board (PIB) approval on Revised Cost Estimate (RCE) of ₹913.63 crore (including IDC of ₹36.57 crore) at March 2010 Price Level was accorded on 04.06.2010. NEEPCO had confirmed that there would be no further RCE and the revised Date of Commercial Operation (COD) was fixed as January 2014.

5. It was discussed in the PIB meeting that with the normal funding pattern of debt equity ratio of 70:30, tariff in the project would be high. However, with debt equity ratio of 85:15 and with 2% depreciation applied for the first 15 years, tariff would become affordable. The Joint Adviser, Project Appraisal and Management Division (PAMD), Planning Commission, GOI suggested that tariff as determined by the Central commission may be acceptable to Government of Mizoram. However, it was observed by the PIB that the tariff for the project is to be worked out on the basis of funding of the project as approved by the PIB. Accordingly, the Govt. of



Mizoram signed Power Purchase Agreement (PPA) with NEEPCO on 02.07.2010 for purchase of entire power from the project.

6. The revised CCEA clearance for the project was accorded on 14.01.2011 with RCE of ₹913.63 crore with a completion period of 36 months. Following are the stipulation of the Investment Approval.

(a) Revised cost estimate at ₹913.63 crore including IDC& FC of ₹36.57 crore at March 2010 PL (Hard cost: ₹877.06 crore; IDC& FC: ₹36.57 crore)

(b) Debt equity ratio at 85:15

(c) Financial pattern:

Equity	- ₹137.04 crore
Loan from Fin Institution	- ₹184.63 crore
Subordinate loan from Govt. of India	- ₹291.96 crore
Grant from DoNER Ministry	- ₹300.00 crore

Total - ₹913.63 crore

(d) Subordinate loan from Govt. of India will be charged @1% per annum from COD and repayment of principal to start from 16th year after commissioning and will continue till 30th year.

(e) Any further increase over the cost as approved above, except on account of indexation would be borne by NEEPCO. Further, the State Government of Mizoram will sort out crop compensation issues, if any, separately without having any financial implication on the project cost.

(f) The project will be commissioned in 36 months from the date of investment approval.



7. The RCE was again updated at December 2015 PL for ₹1441.52 crore (including IDC & FC of ₹110.99 crore) with revised COD as June, 2017, wherein the 1st year tariff of the project was projected as ₹10.44 per unit and the levellised tariff as ₹10.54 per unit.

8. CEA on 20.01.2017, vetted the RCE of TrHEP at ₹1263.32 crore (hard cost) at December, 2015 PL while recommending IDC & FC up to December, 2015 PL at actuals and from January, 2016 to September, 2017, on estimation to MoP, Gol. The CEA has mentioned two scenarios vide its letter dated 18.04.2017.

(i) With fixed grant and subordinate loan as per Investment approval: ₹66.10 crore

(ii) With financing pattern in terms of % as per Investment approval: 58.20 crore

i.e. RCE with the stipulation (i): ₹1263.32cr+₹66.10cr=₹1329.42 crore

RCE with the stipulation (ii): ₹1263.32cr+₹58.20cr=₹1321.52 crore

9. The Secretary to Govt. of Mizoram, Power & Electricity Department, vide his letter dated 20.01.2017 had informed MoP regarding their intention to surrender power of Tuirial HEP other than the 12% free power.

10. CEA vide letter dated 08.03.2017 to MoP, Gol has observed that an amount of ₹203.64 crore (Price escalation ₹196.34 crore + Taxes on escalated price ₹7.30 crore) due to indexation may only be added in the approved project cost for calculating the energy tariff and balance increased amount ₹182.62 crore (1263.32 crore - 877.06 crore - 203.64 crore) may be met by NEEPCO from its own resources as agreed by them at the time of the revival of the project.

Capital cost and annual fixed charges claimed



11. The capital cost claimed by the petitioner in form 5b of the affidavit dated 12.7.2018 is as below:-

Particulars	(₹ in lakh)	
	30.10.2017	30.1.2018
Capital cost without IDC, FC, FERV & Hedging Cost	27200.23	27911.56
IDC, FC, FERV & Hedging Cost		
Interest During Construction (IDC)	6526.82	6934.18
Financing Charges (FC)	0.00	0.00
Foreign Exchange Rate Variation (FERV)	0.00	0.00
Hedging Cost	0.00	0.00
Total of IDC, FC, FERV & Hedging Cost	6526.82	6934.18
Capital cost including IDC, FC, FERV & Hedging Cost	122787.68	143192.06

12. The petitioner vide affidavit dated 12.7.2018 has claimed the annual fixed charges as below:-

Particulars	(₹ in lakh)		
	2017-18		2018 - 19
	30.10.2017 to 28.01.2018	30.01.2018 to 31.03.2018	
Depreciation	514.28	381.24	2244.39
Interest on Loan	1041.22	771.40	5166.46
Return on Equity	1268.69	920.58	5447.67
Interest on Working Capital	33.47	15.78	590.27
O & M Expenses	1443.69	972.92	6108.00
Total	4301.35	3061.92	19556.79

Submission of Petitioner and Respondent

13. During the hearing dated 22.5.2018, the representative for the respondent submitted the following:

- (i) *There is huge cost and time overrun in the project and the reasons given by the petitioner are not acceptable, since the petitioner was aware of the geopolitical conditions in the State of Mizoram. Any further increase over the cost approved above, except on account of indexation is to be borne by the petitioner;*
- (ii) *The project was to be commissioned within 36 months from the date of investment approval (i.e 14.1.2011). The COD of the generating station may be considered as on 27.4.2018 since the units were not reliable, not stable and had not complied with established commercial practices till 26.4.2018*



(iii) *It was discussed in the PIB meeting that with the normal pattern of debt-equity ratio of 70:30, the tariff worked out is Rs. 8.77/unit and levelised at Rs. 7.44/ unit. However, with the debt-equity ratio of 85:15, the tariff is Rs. 4.18/unit and levelised at Rs.4.83/unit, which is more affordable to the respondent.*

14. The representative for the petitioner submitted the following:

(i) *The project cost has been worked out as Rs. 913.63 crore plus indexation cost of Rs. 203.64 crore which has been mutually accepted by the parties towards recovery of tariff;*

(ii) *Based on the CERC norms, considering O&M charges @ 4% and with 12% free power the tariff for the first year worked out as Rs. 6.60/unit and levelised tariff at Rs. 8.05/ unit based on the CCEA sanction wherein project cost includes the grant of Rs. 300 crore. On further insistence for more reduction of tariff, the petitioner agreed to consider O&M charges @ 2.5% instead of the allowed normative O&M charges of 4%. Other parameters remaining the same, with reduced O&M charges @ 2.5% the tariff for the first year worked out to Rs. 5.79/unit and levelised tariff at Rs. 6.60/unit.*

(iii) *With the additional grant of Rs.133.99 crore by Ministry of Development of North Eastern Region, the tariff was worked as Rs. 5.18/unit (with 12 % free power). The petitioner is in no position at this stage to further reduce the tariff as claimed by the respondents.*

15. Further, it was submitted by both the parties that there has been no dispute with regard to the project cost of ₹913.63 crore plus indexation cost amounting to ₹203.64 crore. However, the representative of the respondent submitted that the State of Mizoram does not have the capacity to pay the tariff based on the agreed capital cost as above.

16. We have considered the submissions of both the parties. It is noted that based on the CERC norms, considering O&M charges @ 4% and with 12% free power, the first year tariff and the lowest tariff worked out as ₹6.60/unit and ₹8.05/unit, respectively, based on the CCEA sanction wherein project cost includes the grant of ₹300 crore. However, on further insistence by the respondent for more reduction of tariff, the petitioner agreed to consider O&M charges @ 2.5% instead of the allowed normative O&M charges of 4%. In this regard, Regulation 47 of the 2014 Tariff Regulation provides as below:-

47. Norms to be ceiling norms:



Norms specified in these regulations are the ceiling norms and shall not preclude the generating company or the transmission licensee, as the case may be, and the beneficiaries and the long-term transmission customers /DICs from agreeing to the improved norms and in case the improved norms are agreed to, such improved norms shall be applicable for determination of tariff.

17. As per the Regulation quoted above, the norms specified in these regulations are ceiling norms and, therefore, the petitioner and respondent are free to adopt any other norms as mutually agreed upon. Accordingly, in line with the regulation quoted above and upon agreement between petitioner and respondent, the depreciation and O&M Expenses are calculated at the rate of 2% and 2.5% respectively.

Commissioning Schedule and Date of Commercial Operation (COD)

18. The anticipated COD of the unit-I and unit-II of the generating station as submitted by the petitioner vide affidavit dated 19.12.2017 is 15.12.2017.

19. The petitioner has filed the present petition for determination of tariff for the generating station for the period from COD till 31.3.2019 based on capital expenditure projected to be incurred up to COD.

20. However, the petitioner vide affidavit dated 13.6.2018 has submitted that unit no. I and II of the generating station were ready for commercial operation on 30.10.2017 and 30.1.2018 respectively after successful completion of trial run and accordingly the COD of the station shall be 30.1.2018. The respondent Mizoram has submitted that until complete communication system was put in place, COD of generating station may be deferred.

21. During the hearing dated 22.5.2018, the representative of the respondent submitted regarding the COD of the station that the COD of the generating station may be considered as on 27.4.2018 since the units were not reliable, not stable and



had not complied with established commercial practices till 26.4.2018. It was further submitted that the State of Mizoram does not have the capacity to pay the tariff based on the agreed capital cost. As regards the COD of the generating station, it was agreed that it should be considered as 27.4.2018.

22. As regards the COD of the units/ generating station, the petitioner vide affidavit dated 13.6.2018 has submitted that unit no. I and II were ready for commercial operation on 30.10.2017 and 30.1.2018 and hence, the Station COD of the generating station shall be 30.1.2018. The relevant portion from the petitioner's submission is extracted hereunder:-

".....the matter relating to the COD of the generating station in the background of consistent power having been declared as available from a date prior to 27.04.2018 and further the fact that as such the petitioner has agreed to a per unit tariff computed on the basis of project cost of Rs 913.63 cr as approved by CCEA plus indexation cost as recommended by CEA instead of the regular tariff being computed on the capital cost of the project, the petitioner wish to place the following salient aspects and pray for the said tariff to be allowed from 30.10.2017 for Unit No.1 and 30.1.2018 for Unit No.2.

Unit Nos. 1 and 2 of the Tuirial HEP were synchronized with the grid on 25.08.2017 and 28.11.2017 respectively

That Unit Nos. 1 and 2 of the Tuirial HEP were ready for commercial operation after successful completion of trial run on 30.10.2017 and 30.01.2018 respectively. Accordingly, the station COD shall be 30.01.2018."

23. The petitioner in the said affidavit has further furnished copies of relevant correspondences with the P&E Department, Government of Mizoram informing them of successful completion of trial operation of the units and requesting for clearance for declaration of COD. As regards data telemetering system, the petitioner has submitted as below:

"That the Tuirial HEP is connected only to the Mizoram grid with no other route for transmission to any other system directly and that no power flow from a generating source can take place unless it is connected to a load. Hence, it is obvious and clear that the power generated by this station as mentioned at paragraph 4 above and as



recorded by the energy meters installed at the station, has been duly drawn by the Power & Electricity Department, Government of Mizoram.

That the energy generated by Unit No. 1 from 30.10.2017 to 26.04.2018 is 54.0816 Million Units and the energy generated by Unit No. 2 from 30.01.2018 to 26.04.2018 is 23.8760 Million Units, i.e a total of 77.9576 Million Units were generated by the two units after completion of trial operation and readiness for COD, the charges for which may be computed with RoE reduced by 1 % to ensure fair returns to the Petitioner.

The Petitioner also submits that the required data telemetering system was successfully commissioned on 27th April 2018.”

24. Subsequently, during the hearing dated 8.8.2018, the representative of the respondent reiterated that the COD of the generating station should be considered as 27.4.2018. He further stated that objections were raised in NERPC forum with respect to the COD as 30.1.2018. In response to the petitioner's submission to allow tariff from 30.1.2018, he submitted that energy accounting started from the date when data telemetering system was successfully commissioned and hence, 27.4.2018 should be considered as COD. In response, the petitioner submitted that Units I & II of the generating station were commissioned on 30.10.2017 and 30.1.2018 respectively while Data Telemetering System (DMS) was, however, commissioned on 27.4.2018. Accordingly, the petitioner prayed to allow ROE of the generating station in terms of Regulations 24(2)(iv) and 24(2)(v) of the 2014 Tariff regulations from the COD till the date of commissioning of DMS.

Analysis and decision

25. We have examined the submissions made by the parties and the documents available on records. As per the ROP of the hearing dated 22.5.2018, the COD of the station was stated to have been agreed upon by both the parties as 27.4.2018. However, the petitioner vide affidavit dated 13.6.2018 and during the hearing dated 8.8.2018, has submitted that the COD of the units/ station may be considered as 30.10.2017 for unit-I and 30.1.2018 for unit-II and tariff may be allowed from such



dates with reduction of 1% in the ROE till commissioning of Data Telemetry System. In this scenario, we find it prudent to examine the issue of COD based on the subsequent submissions of the parties.

26. It is noticed from the petitioner's letter to the SLDC that the first unit of the plant had reportedly generated to its maximum capacity rating for a continuous period of 12 hours in terms of clause 6.3A of the amended IEGC Regulations of 2016 for trial operation. The trial run was completed at 22.00 hours on 29.10.2017. Similarly, the 2nd unit was commissioned and the trial run was completed on 29.1.2018. The petitioner has furnished the relevant data sheets as well.

27. It is further noted that NEEPCO, in its letter dated 16.3.2018 to P&E Department, Govt of Mizoram has mentioned that total of more than 75 MUs were generated by the Plant till date and transmitted through the 132 KV, single ckt, Tural-Bawktlang (Kolasib) Transmission line. The Respondent has not raised any objection/ issue to this claim by the petitioner.

28. It is evident from the above that except for the DMS, unit-I and unit-II of the station were capable of generation in all respects since 30.10.2017 and 30.1.2018 respectively, with compliance to the requirements of IEGC Regulations of 2016. The petitioner has also furnished the data to justify the efficient operation of the units post above dates and drawl of power by the beneficiary.

29. As regards the COD, Regulation 4 of the 2014 Tariff Regulations provides as under:

4. Date of Commercial Operation:

The date of commercial operation of a generating station or unit or block thereof or a transmission system or element thereof shall be determined as under:



(2) Date of commercial operation in relation to a generating unit of hydro generating station including pumped storage hydro generating station shall mean the date declared by the generating company from 0000 hour after the scheduling process in accordance with the Grid code is fully implemented, and in relation to the generating station as a whole, the date declared by the generating company after demonstrating peaking capability corresponding to installed capacity of the generating station through a successful trial run:

Provided that:

(i) where beneficiaries have been tied up for purchasing power from generating station, scheduling process for a generating unit of the generating station or demonstration of peaking capability corresponding to installed capacity of the generating station through a successful trial run shall commence after seven days notice by the generating company to the beneficiaries and scheduling shall commence from 0000 hr after completion of trial run:

(ii) the generating company shall certify to the effect that the generating station meets key provisions of the technical standards of Central Electricity Authority (Technical Standards for Construction of Electrical plants and electric lines) Regulations, 2010 and Grid code:

(iii) the certificate shall be signed by CMD/CEO/MD of the company subsequent to its approval by the Board of Directors in the format enclosed at Appendix VI and a copy of the certificate shall be submitted to the Member Secretary, (concerned Regional Power Committee) and concerned RLDC before declaration of COD:

30. As regards the commissioning of the generating station without commissioning of data telemetry etc., Regulation 24 of the 2014 Tariff Regulations provides as below:

(24)

(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:

31. Based on the documents and information available on records and submission of both the parties, we find merit in the submission of the petitioner that the unit I and II of the generating station achieved COD on 30.10.2017 and 30.1.2018 respectively in terms of Regulation 4(2) of 2014 Tariff Regulations. As regards the submission made by the respondent that there was no DMS till



26.4.2018 and thus, COD could be declared on 27.04.2018, we find no reason to deny the tariff from 30.10.2017 and 30.1.2018 for Unit-I and Unit-II respectively though with 1% reduction in ROE in terms of 24(iv) and (v) of 2014 Tariff Regulations quoted above.

32. Accordingly, in line with the above discussion and Regulations quoted above, the COD (without DMS) of the 1st unit of the station was achieved on 30.10.2017 and that of the 2nd unit on 30.1.2018. We decide accordingly. The RoE in this case shall be reduced by 1% for such period during which the DMS was not commissioned, i.e. till 26.4.2018 in terms of 24(iv) of 2014 Tariff Regulations.

Time Overrun

33. The period of delay in the commissioning of the units and the reasons for delay has been examined based on the available records and the same has been discussed below.

34. As stated TrHEP was revived in 2010 with the initiative of Public Investment Board. The revised CCEA clearance for the project was accorded on 14.01.2011 with revised cost estimate of ₹ 913.63 crore. with revised completion period of 36 months. The Scheduled COD as per revised CCEA approval was fixed on 14.01.2014 and the same was agreed to by the parties.

35. The petitioner vide affidavit dated 19.12.2017 has furnished the reasons for time overrun along with delay analysis indicating the activities delayed, the reasons for the delay and the corresponding delay on account of the delay in each of the activities and the same is summarized hereunder.

Sl.	Reason for delay	Period	Remarks
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No.		From	To	In days	
(1)	Dewatering of accumulated water (DT Outlet)	14.01.11	28.01.11	15	
(2)	Removal of slush (DT Outlet)	11.02.11	29.04.11	78	
(3)	Deteriorated condition of approach road at Saiphai (cement could not be transported)	24.05.11	09.06.11	17	
(4)	Poor condition of Saiphai-Saipham Road	16.06.11	31.10.11	138	Partially affected
(5)	Ban imposed on crossing of heavy vehicles over Barak Bridge at Silchar (aggregates could not be transported)	02.01.12	26.02.12	56	
(6)	Disruption of Saiphai-Saipum road	04.04.12	27.05.12	54	Partially affected
(7)	Disruption of Saiphai-Saipum road	05.06.12	10.07.12	36	
(8)	Retaining wall collapse at Saiphai leading to stoppage of heavy vehicles	11.07.12	25.07.12	15	
(9)	Detonated condition of Bhagabazar-Natacherra Road	01.08.12	30.10.12	91	
(10)	Slope Failure at Power House. Removal of debris & restoration work, including piling	31.03.13	31.01.15	671	Partially affected
(11)	Blockade of approach by local villagers at Khulicherra	04.04.13	13.04.13	10	22 months
(12)	Restriction of Heavy vehicular movement on Bhagabazaar-Natacherra Road	26.06.13	30.07.13	35	Overlapping
(13)	Interruption of the Diesel supply (due to gauge conversion of rail track and blockade of NH-44 because of landslides)	01.10.14	31.10.14	31	Overlapping
(14)	Closure of Rawitulkhawthia quarry	30.06.15	24.09.15	87	Overlapping
(15)	Closure of Bagabazar-Natacherra Road for Heavy Vehicles	06.08.15	18.09.15	44	
(16)	Load restriction of 10 T at Bhagabazar-Natacherra Road	19.09.15	30.11.15	73	
	Total (50% considered for partially affected)			1234	
	Time required for increased quantity	Approx.		146	
				1380	
		= 46 months			

36. The petitioner has further submitted justifications for time overrun of the project as under:



(a) Lack of proper working atmosphere at project site: one of the prime reasons for time overrun is imputable to prevailing law and order situation in and around the project as well as tensions and unrests troubling the Northeast as a whole. The project area is also prone to subversive activities by the insurgent groups. Since inception of the project, the prevalent situation was never conducive to congenial. There have been repeated cases of threats by unruly elements. To cite the worst instance, all project activities had come to grinding halt following abduction/ threat of some officials of the Corporation posted in the Project.

- i. 6 NEEPCO officials abducted on 31.3.2000 and released after 74 days captivity on 14.06.2000.
- ii. Incident of kidnapping was repeated again in October 2000 with abduction of 11 employees of contractor.
- iii. Blockade of approach road near Bailey Bridge by local people w.e.f 07.11.12 to 13.11.12, which caused fear psychosis amongst the labours.
- iv. Threat by a group of 17-20 armed persons carrying gun, draggers, knife, chain of bullet stack etc. on 04.12.12 on workers of Major Civil Contractors, M/s Patel Engineering Ltd, caused fear psychosis amongst the workers and the project activity was completely under alt upto 10.12.12
- v. Fear psychosis in general adversely affected progress of work & thereby time overrun.

(b) Deteriorated condition of approach road to project site viz. Bhagabazar – Saiphai – Saipum Road: One of the prime reasons is attributed to extreme deteriorated condition of the main approach road viz Bhagabazar-Natacherra-Saiphai-Saipum, partly under the Jurisdiction of Assam PWD and partly under the



Govt. of Mizoram. To cite the worst instance, following are the few reasons attributed to the time overrun.

- (i) Extreme deteriorated condition of Bhagabazar-Natacherra-Saiphai-Saipum Road adversely affected transportation of construction materials and thereby led to considerable time overrun.
- (ii) Road collapse at Saiphai w.e.f. 11.07.12 to 25.07.12
- (iii) Restriction in Heavy vehicular movement w.e.f 04.04.12 to 27.05.12 on Saiphai-Saipum road w.e.f. 04.04.12 to 27.05.12 due to fresh earth carried out by Dept. Of PWD, Govt. of Mizoram.
- (iv) Restriction in Heavy vehicular movement w.e.f 26.06.13 to 30.07.13 on Bhagabazar-Natacherra Road by local villagers in protest against deteriorated road condition.
- (v) Road Blockade by the local villagers of Kulicherra, Jamalpur & Barman Village w.e.f. 04.04.13 to 13.04.13 in protest against repairing of road.
- (vi) Road blockade by local villagers at Saphai w.e.f. 20.08.13 to 26.08.13
- (vii) Closure of bhagabazar-Natacherra Road for Heavy vehicles from 06.08.2015 to 18.09.15 and continuation of load restriction of 10 MT upto 30.11.2015
- (viii) Further damage of Barak bridge at Silchar w.e.f. 02.01.12 to 26.02.12 completely stopped the transportation of aggregates from the identified quarry.

(c) Unfavourable rock conditions encountered: The open excavation and underground work done is vulnerable to collapse due to poor geology encountered. The unfavourable dip and strike for tunnelling was pointed out by GSI also. Near the river on the left bank and in the area of the inlet portals of the diversion tunnels, stand stone layers of few meters thickness cropout. The drill holes and the exploratory drift excavated into the diversion tunnel inlet area indicated that this rock



is mainly thinly bedded and of low to moderate strength. This had necessitated taking extra measures for overall safety of the structures & workers. The slope protection and rock support measures adopted comprised of providing fore polls of 40 mm/32mm/25 mm dia, providing 25 mm dia rock bolts/anchors bars, providing shotcrete with welded wire mesh with shotcrete of minimum thickness of 10 cm. Despite all precautions and adequate measures taken as described above, there have been slope failures in spillway excavated benches, power house excavation, tunnel excavation. Major failures are narrated as below:

- (i) Heavy loose fall occurred on 30.11.11 in D/T-II between Ch. 208.5 m to Ch. 211.5 m (3 m) from left side crown to bottom, which dislocated/deformed 27 nos. Of steel rib in left side from Ch. 182.5 m to Ch 208.5 m. The Work in D/T – II was completely stopped w.e.f. 30.11.11 to 31.01.12 due to restoration work.
- (ii) Formation of cavity in D/T-II during suspension period. Work stopped in D/T-II w.e.f. 01.05.11 to 30.06.11 because of restoration work.
- (iii) The failure of slopes in power house occurred as under
 - At El 59 m : 12.12.12
 - At El 49 m : 30.03.13
 - At El 41 m : 21.04.13
 - Massive slope failure: 09.05.13

Work of power house was completely stopped w.e.f. 31.03.13 to 16.04.13

(d) Inundation of Intake faces of Power Tunnel and low level outlet tunnel and removal of slush/silt:

The heavy rise in river water level during monsoon of 2003-04, 2004-05 and 2007 monsoon had overtopped/breached the protection bund and inundated the intake



faces of power tunnel & low level outlet tunnel and also outlet stilling basin, resulting in deposition of heavy slush/silt.

On resumption of the Project, the deposited slush had to be removed and total work days lost is 78 days (11.02.11 to 29.04.11) in outlet side and 56 days (06.04.11 to 31.05.11) in Inlet side.

(e) Additional Time required for execution of increased quantity:

- (i) Most of the section of the Diversion Tunnel was to be supported with permanent steel supports (Class-IV) in view of the adverse geology condition. This had resulted in longer cycle time with consequential time overrun in completion of the entire job. Execution of outlet energy dissipater works involving huge concreting works with rip rap etc. on the basis of final design also required additional time.
- (ii) Major slope failure in Power House necessitates to take up extra works such as piling, geo-grid, anchorage, drainage hole, etc, as suggested by POE/GSI requiring extra time.

(f) Frequent bandhs called in adjacent states: The frequent bandh call given by various organizations in the adjacent state like Assam/Meghalaya had also affected movement of construction materials to the Project.

(g) Shorter working spells due to prolonged monsoon period: The momentum of various project activities was upset due to onset of early monsoon and heavy downpour with prolonged monsoon experienced during the last few years. Further, due to deterioration of accesses to various fronts activities did not take place immediately with recession of monsoon, rather after re-development of damaged



approaches. This has resulted to lesser working spell and reduced progress of work and thus has also contributed to the delay in commissioning schedule.

Submission by the Respondent:

37. With respect to the time overrun involved in the commissioning of TrHEP, the respondent has submitted that there is huge cost and time overrun in the project and the reasons given by the petitioner are not acceptable, since the petitioner was aware of the geopolitical conditions in the State of Mizoram. Hence any further increase over the cost approved above, except on account of indexation is to be borne by the petitioner.

Analysis and Decision

38. We have considered the submissions of the petitioner. There is time-over run of about 4 years in the commissioning of the project. The petitioner in justification has cited various un-controllable factors as discussed in the previous paragraphs.

39. The petitioner has submitted that various events such as lack of proper working atmosphere at project site, dewatering of accumulated water, removal of slush, deteriorated condition of roads, ban imposed on crossing of heavy vehicles over Barak bridge at Silchar, retaining wall collapse at Saiphai leading to stoppage of heavy vehicles, blockade of approach by local villagers, restriction of heavy vehicular movement, interruption of the diesel supply, closure of Rawitul Khawhthia quarry has claimed the time overrun of 490 days and claimed that the reasons attributed to the delay are beyond the control of the petitioner. Owing to the remote geographical conditions of the site, the law and order situation in the North-East region leading to the delay and restrictions in construction of the project as claimed by the petitioner are reasonable and justified. As such, the delay of 490 days has been condoned.



40. In respect of other works such as Slope Failure at Power House (671 days), load restriction of 10 T at Bhagabazar-Natacherra Road (73 days) and time required for execution of increased quantity (146 days), the petitioner has not furnished the details of time over-run suffered against each activity, amount of re-work done by slope failure, and the scope of increased work. In the absence of these details, it is not possible to examine the delay in completion of work and allow/disallow the time-overrun. Accordingly, the time overrun of 890 days on this account is not condoned.

41. The capital cost as per original CCEA approval dated 14.1.2011 is ₹91363.32 lakh including IDC of ₹3657.10 lakh at March 2010 price level. The petitioner vide affidavit dated 6.7.2018 has claimed the auditor certified capital cost of ₹145720.17 lakh (including IDC, FC, FERV & Hedging Cost of ₹6934.18 lakh and the IDC of ₹6934.18 lakh and establishment charges of ₹26292.81 lakh) as on COD with DMS (27.4.2018). However, CEA after assessment of capital cost, keeping in view the impact on IDC, price escalation etc. due to time overrun has restricted the capital cost to ₹91363.32 lakh (including the IDC of ₹3657.10 lakh and establishment charges of ₹10159.64 lakh) plus indexation cost of ₹20364 lakh which was agreed upon by the generator and the Govt. of Mizoram. Thus the capital cost approved by CEA has reduced IDC and establishment cost by ₹3277.18 lakh and ₹16133.17 lakh respectively from the claimed audited capital cost as on COD with DMS (27.4.2018)

42. In view of the above, further deduction of IDC and IEDC on account of the time-overrun is not necessary since ceiling capital cost of ₹1117.27 crore has been adopted, where IDC and IEDC are already reduced by the CEA and same is agreed upon by the petitioner and the respondent.



43. The issue of time and cost overrun shall be reviewed once the report of the Standing Committee is placed before this Commission.

Admissibility of Additional Return on Equity

44. The time line for completion of hydroelectric projects for the purpose of additional return of 0.5% as per regulations shall be as specified in the original concurrence issued by the CEA under section 8 of the Act.

45. In the instant case, the original and the revised approval after revival of the project in 2010 was given by the CCEA on 14.01.2011 and the time line for completion of the project was 36 months from the date of revised approval. Accordingly, the Schedule Commercial Operation date is 14.01.2014. However, Unit-I & Unit-II of the project was commissioned after 14.01.2014. Hence, none of the units of the station are entitled for an additional return of 0.5 % under the provision of Regulation 24(2) (ii) of the 2014 Tariff Regulations.

Interest during Construction (IDC) and Incidental Expenditure During Construction (IEDC)

46. The petitioner has claimed IDC amounting to ₹6526.82 and ₹6934.18, as on COD of unit-I and unit-II respectively. The petitioner has submitted loan agreements along with the petition vide affidavit dated 20.12.2017. Further, vide affidavit dated 28.6.2018, the petitioner has furnished the details such as drawls and repayment details and rate of interests etc pertaining to IDC claimed. Based on the information furnished by the petitioner, the claim of the IDC has been verified.

47. As discussed in the section with respect to time overrun, it has been decided that out of the total time overrun, the delay of 490 days has been condoned and the remaining delay of 890 days has been disallowed. However, it is observed that



CCEA while approving the capital cost has reduced IDC by ₹3277.18 lakh from the claimed audited capital cost as on COD with DMS (27.4.2018). In view of this, further deduction of IDC on account of the time-overrun is not required. Hence, the IDC as approved by the CCEA i.e. ₹3657 lakh as on COD with DMS has been allowed for tariff.

48. Similarly, the petitioner has claimed IEDC amounting to ₹24574.59 lakh and ₹25285.92 lakh as on COD of unit-I (30.10.2017) and unit-II (30.1.2018) respectively. Against this, the CCEA has allowed IEDC amounting to ₹10360.64 lakh. The same has been allowed for the purpose of tariff.

Additional Capitalization after COD

49. The petitioner has not claimed any projected additional capital expenditure for the period from COD to 31.3.2019, accordingly, no additional capital expenditure considered.

Recovery of Liquidated Damages (LD)

50. The petitioner vide affidavit dated 6.7.2018 has furnished that no amount on account of LD is recovered till date. The petitioner is, however, directed to furnish the details of LD recovery, if any, at the time of true-up and same shall be adjusted in the capital cost.

Capital cost allowed for the purpose of tariff

51. Based on the above discussion, the capital cost as approved by the CCEA amounting to ₹111727.32 lakh has been allowed as on COD for the purpose of tariff. The capital cost as on COD of unit-I has been considered as 50% of capital cost as on the station COD.



52. It is further noticed that as per the financing plan of the project, ₹300.00 crore have been received as Grant from DoNER Ministry. With respect to the treatment of grant received in the capital cost, the regulations provide as below:-

9. Capital Cost:

6) *The following shall be excluded or removed from the capital cost of the existing and new project:*

.

(d).....

Provided that any grant received from the Central or State Government or any statutory body or authority for the execution of the project which does not carry any liability of repayment shall be excluded from the Capital Cost for the purpose of computation of interest on loan, return on equity and depreciation;

53. In line with the regulation quoted above, the capital cost for the purpose of calculation of Return on Equity, Interest on Normative Loan and Depreciation has been reduced by the amount of grant received, i.e. ₹300.00 crore.

54. Accordingly, the capital cost for the purpose of tariff is as below:-

(₹ in lakh)

Capital cost without IDC, FC, FERV & Hedging Cost	Capital Cost allowed (Restricted upto CEA approved cost)	
	30-10-2017	30-01-2018
Capital cost without IDC, FC, FERV & Hedging Cost	92670.58	108070.22
Add: IDC	3135.98	3657.1
Capital cost including IDC	95806.5581	111727.32
less: DONER Grant	30000.00	30000.00
Gross block for tariff	65806.5581	81727.32

Debt-Equity ratio:

55. Regulation 19 of the 2014 Tariff Regulations provides as under:

“19. Debt-Equity Ratio

(1) For a project declared under commercial operation on or after 1.4.2014, the debt-equity ratio would be considered as 70:30 as on COD. If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:

Provided that:

i. where equity actually deployed is less than 30% of the capital cost, actual equity shall be considered for determination of tariff:



- ii. the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment:
- iii. any grant obtained for the execution of the project shall not be considered as a part of capital structure for the purpose of debt : equity ratio.”

56. In the instant case, the actual debt equity position as per form 14 as on COD is as below:

(₹ in lakh)		
Loans	71905.9133	83.99%
Equity	13704.00	16.01%
Total	85609.91	100.00%

57. However, as per the CCEA approval dated 14.1.2011, the stipulated debt equity ratio is 85:15. The same has been applied for the purpose of tariff.

Annual Fixed Charges (AFC)

58. Based on the above discussion, the following Annual Fixed Charges have been allowed:

Return on Equity

59. Regulation 24 of the CERC Regulation 2014 provides as below:

“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

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

25. 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.

61. As discussed at para 32 above, the rate of RoE has been reduced by 1% for the period till 27.4.2018. With respect to the tax rate for grossing up of RoE, the petitioner has claimed tax rate of 34.99%. 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. As such, 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)

Return on Equity	29-10-2017	29-01-2018	01-04-2018	27-04-2018
	28-01-2018	31-03-2018	26-04-2018	31-03-2019
Gross Notional Equity	9870.98	12259.10	12259.10	12259.10
Addition due to Add. Cap.	0.00	0.00	0.00	0.00
Closing Equity	9870.98	12259.10	12259.10	12259.10
Average Equity	9870.98	12259.10	12259.10	12259.10
Return on Equity (Base Rate)	15.500%	15.500%	15.500%	16.500%
Tax rate for the year	20.961%	20.961%	20.961%	20.961%
Rate of Return on Equity	19.611%	19.611%	19.611%	20.876%
Return on Equity	487.92	408.36	171.25	2376.88

Interest on Loan

62. 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 decapitalization 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 the loan.”



63. The salient features of computation of interest on loan allowed in tariff are summarized below:

- The opening gross normative loan as on COD of each unit has been arrived at in accordance with Regulation 26 of the 2014 Tariff Regulation.
- The weighted average rate of interest has been worked out on the basis of the actual loan portfolio of respective year applicable to the project.
- The repayment for the year of the tariff period 2014-19 has been considered equal to the depreciation allowed for that year.
- The interest on loan has been calculated on the normative average loan of the year by applying the weighted average rate of interest.

(₹ in lakh)

Interest on normative Loan	29-10-2017	29-01-2018	01-04-2018	27-04-2018
	28-01-2018	31-03-2018	26-04-2018	31-03-2019
Gross Normative Loan	55935.57	69468.22	69468.22	69468.22
Cumulative Repayment upto Previous Year	0.00	331.74	609.39	725.82
Net Loan-Opening	55935.57	69136.48	68858.84	68742.40
Repayment during the year	331.74	277.65	116.43	1518.11
Addition due to add-cap	0.00	0.00	0.00	0.00
Net Loan-Closing	55603.84	68858.84	68742.40	67224.29
Average Loan	55769.71	68997.66	68800.62	67983.35
Weighted Average Rate of Interest on Loan	4.99%	4.99%	5.76%	5.76%
Interest	701.45	584.84	282.29	3636.90

Depreciation

64. 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 up to 31.3.2014 from the gross depreciable value of the assets.

(7) The generating company or the transmission licensee, as the case may be, shall submit the details of proposed capital expenditure during the fag end of the project (five years before the useful life) along with 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.”

65. The petitioner has claimed depreciation at the rate of 2% p.a in the instant petition. As discussed at para 17 above, the same has been allowed for the purpose of tariff.

66. The depreciation has been calculated as below:-

	(₹ in lakh)			
	29-10-2017	29-01-2018	01-04-2018	27-04-2018
	28-01-2018	31-03-2018	26-04-2018	31-03-2019
Gross Block				
Opening Gross Block	65806.56	81727.32	81727.32	81727.32
add-cap	0.00	0.00	0.00	0.00
Closing gross block	65806.56	81727.32	81727.32	81727.32
Average gross block	65806.56	81727.32	81727.32	81727.32
Land Related Cost	972.00	972.00	972.00	972.00
Rate of Depreciation	2%	2%	2%	2%
Depreciable Value	58351.10	72679.79	72679.79	72679.79
Balance Useful life of the asset	35.00	35.00	34.83	34.83
Remaining Depreciable Value	58351.10	72348.05	72070.40	71953.97
Depreciation	331.74	277.65	116.43	1518.11



O&M expenses

67. O&M expenses of the project for the period 2014-19 shall be governed by Regulation 29 (3) (b) of 2014 Regulations, which state as under:

“In case of the hydro generating stations, which have not been in commercial operation for a period of three years as on 1.4.2014, operation and maintenance expenses shall be fixed at 2% of the original project cost (excluding cost of rehabilitation and resettlement works) for the first year of commercial operation. Further, in such case, operation and maintenance expenses in first year of commercial operation shall be escalated @6.04% per annum up to the year 2013- 14 and then averaged to arrive at the O&M expenses at 2013-14 price level. It shall be thereafter escalated @ 6.64%per annum to arrive at operation and maintenance expenses in respective year of the tariff period.”

68. As discussed at para 17 of this order and as agreed by both petitioner and the respondent, the O&M charges are reduced from 4% to 2.5%. Accordingly O&M expenses are allowed as under:

(₹ in lakh)	
Capital Cost	111727.32
Less:R & R Cost	0.00
Capital Cost for the purpose of O & M	111727.32
O & M for the year @2.5% (Annualised)	2793.183

69. Accordingly, O&M Expenses for the tariff period have been allowed as below:-

(₹ in lakh)			
29-10-2017	29-01-2018	01-04-2018	27-04-2018
28-01-2018	31-03-2018	26-04-2018	31-03-2019
704.04	474.46	198.97	2594.22

Interest on working capital

70. 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

(c) 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.”



71. Accordingly, the receivables considering two months of fixed cost are worked out and allowed as under:

(₹ in lakh)

29-10-2017	29-01-2018	01-04-2018	27-04-2018
28-01-2018	31-03-2018	26-04-2018	31-03-2019
382.33	299.50	131.90	1736.87

72. Maintenance spares @ 15% of operation and maintenance expenses are worked out and allowed as under:

(₹ in lakh)

29-10-2017	29-01-2018	01-04-2018	27-04-2018
28-01-2018	31-03-2018	26-04-2018	31-03-2019
105.61	71.17	29.84	389.13

73. O&M Expenses for one month are allowed as under:

(₹ in lakh)

29-10-2017	29-01-2018	01-04-2018	27-04-2018
28-01-2018	31-03-2018	26-04-2018	31-03-2019
58.67	39.54	16.58	216.18

Rate of interest on working capital

74. Clause (3) of Regulation 28 of the 2014 Tariff Regulations provides as under:

“Interest on working Capital: (3) Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2014 or as on 1st April of the year during the tariff period 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.”

75. In terms of the above regulations, the Bank Rate of 12.60% (Base Rate + 350 Basis Points) as on 1.4.2017 has been considered by the petitioner. This has been considered in the calculations for the purpose of tariff. Necessary computations in support of interest on working capital are appended below:

(₹ in lakh)

	29-10-2017	29-01-2018	01-04-2018	27-04-2018
	28-01-2018	31-03-2018	26-04-2018	31-03-2019
Maintenance Spares	105.61	71.17	29.84	389.13
O & M expenses	58.67	39.54	16.58	216.18
Receivables	382.33	299.50	131.90	1736.87
Total	546.61	410.21	178.33	2342.19



Interest on working capital @ 12.60%	68.87	51.69	22.47	295.12
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Annual Fixed Charges

76. Accordingly, the annual fixed charges for the generating station approved for the period 2014- 19 are as under:

	(₹ in lakh)			
	29-10-2017	29-01-2018	01-04-2018	27-04-2018
	28-01-2018	31-03-2018	26-04-2018	31-03-2019
Return on Equity	487.92	408.36	171.25	2376.88
Interest on Loan	701.45	584.84	282.29	3636.90
Depreciation	331.74	277.65	116.43	1518.11
Interest on Working Capital	68.87	51.69	22.47	295.12
O & M Expenses	704.04	474.46	198.97	2594.22
Total	2294.01	1796.99	791.41	10421.23

Operational Norms

77. The petitioner has claimed the following operation norms.

NAPAF	85%
Auxiliary Energy Consumption	1%

NAPAF

78. TrHEP is a ROR and storage type hydro power project. The Regulation 37 (1)

(a) (b) of the 2014 Tariff Regulations provides as under:

- (a) *Storage and Pondage type plants with head variation between Full Reservoir Level (FRL) and Minimum Draw Down Level (MDDL) of up to 8%, and where plant availability is not affected by silt : 90%*
- (b) *In case of storage and pondage type plants with head variation between full reservoir level and minimum draw down level is more than 8% and when plant availability is not affected by silt, the month wise peaking capability as provided by the project authorities in the DPR (approved by CEA or the State Government) shall form basis of fixation of NAPAF.*

79. Further, Regulation 37 (3) of the 2014 Tariff Regulations provides as under:

"A further allowance of 5% may be allowed for difficulties in North East Region."



80. The petitioner vide Form-2 has claimed NAPAF of 85%. Subsequently vide affidavit dated 13.7.2018 the petitioner has claimed NAPAF as 82% based on the following justification.

Calculation of Normative Annual Plant Availability Factor (NAPAF)

81. The Salient features for Tr HEP are as follows:

FRL:	90.5m
MDDL	68.0m
Normal TWL at Full Load:	30.7m
TWL at 1 unit running:	29.3m

82. From the above it has been observed that the Head Variation between FRL and MDDL is more than 8% for the instant case. Hence month wise peaking capability shall form the basis of fixation of NAPAF. However, as confirmed by the model studies carried out by the E&M Contractor, the load generation (MW) is reduced with lowering of reservoir level/ head. The aforesaid machine characteristic was not considered by CWC while carrying out the Power Potential Study for the DPR.

83. However, while determining monthly peaking capability, the net head calculated in the DPR has been considered. The net head has further been reduced by another 2.0m considering existing TWL. Tail water Level gets raised by approximately 2.0m due to raising of river bed level in downstream of the project which is beyond the control of NEEPCO. From the calculated Monthly Peaking Capability, the obtained NAPAF is 96%. Considering 10% allowance for outage & 5% for North- eastern region, the final NAPAF is $0.85 \times 96\% = 82\%$

84. Regulation 37 (1) (b) of the 2014 Tariff Regulations provides that in case of storage and pondage type plants with head variation between full reservoir level and minimum draw down level is more than 8% and when plant availability is not affected



by silt, the month wise peaking capability as provided by the project authorities in the DPR (approved by CEA or the State Government) shall form basis of fixation of NAPAF. The submission of petitioner for consideration of NAPAF of 82% cannot be accepted at this stage. The monthly peaking capability based on which NAPAF of 85% has been furnished in Form-2 of original tariff petition is based on the net head furnished in the DPR. If there is any reduction in the net head subsequently due to rise in water level in the tail raise then the petitioner should approach the authority / government body which has approved the DPR.

85. In view of the above, NAPAF of 85% is allowed for the year 2018-19. However the petitioner is granted liberty to approach the Commission at the time of truing up along with revision, if any, in the net head duly approved by the competent authority as the same will be in accordance with the law.

Auxiliary Energy Consumption

86. The Regulation 37 (6) (a) of the 2014 Tariff Regulations provides as under:

(6) Auxiliary Energy Consumption (AUX):

(a) Surface hydro generating stations

(i) with rotating exciters mounted on the generator shaft : 0.7%

(ii) with static excitation system : 1.00%

87. The Auxiliary Energy Consumption of 1% claimed by the petitioner is in order and same has been considered for tariff computation.

Design Energy

88. As per the original DPR of the project, the annual Design Energy (DE) of the station is 240.89 MUs. However, the petitioner has claimed annual design Energy of 250.63 MUs for the generating station and has submitted that the same is yet to be approved by CEA. Considering the fact that this is beneficial to the beneficiary, we consider annual Design Energy of 250.63MUs. However, the petitioner is directed to



submit the Design Energy of the station to the Commission as on when approved by CEA, the month-wise break-up the allowed Design Energy of 250.63MUsof the same is as under:

Month	Design Energy (MUs)
April	14.37
May	17.37
June	20.79
July	27.24
August	35.17
September	36.23
October	26.08
November	17.77
December	14.61
January	13.73
February	13.60
March	13.67
Total	250.63

Application fee and the publication expenses

89. The petitioner has sought reimbursement of filing fee and the publication expenses. The petitioner shall be entitled for reimbursement of fee directly from the respondent in accordance with Regulation 52 of the 2014 Tariff Regulations. The petitioner shall also be entitled to recover other statutory expenses in accordance with the 2014 Tariff Regulations. Accordingly, the expenses towards application filing fees shall be directly recovered from the beneficiaries, on pro rata basis. Also, the reimbursement of charges towards publication of notices in newspapers in respect of this petition shall be recovered on pro rata basis, on submission of documentary proof of the same.

90. This order disposes of Petition No. 15/GT/2018.

Sd/-
(Dr. M. K. Iyer)
Member

Sd/-
(A.K. Singhal)
Member

Sd/-
(P.K.Pujari)
Chairperson

