

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No. 116/GT/2013**

**Coram**

**Shri Gireesh B. Pradhan, Chairperson**

**Shri M. Deena Dayalan, Member**

**Shri A.K.Singhal, Member**

**Smt. Neerja Mathur, Member (EO)**

**Date of Hearing: 15.4.2014**

**Date of Order: 15.5.2014**

**In the matter of**

Approval of generation tariff of Koteswar Hydroelectric Project (4 x 100 MW) for the period from 1.4.2011 to 31.3.2014.

**And in the matter of**

THDC India Ltd  
Pragatipuram, By pass Road  
Rishikesh-249201  
Uttarakhand

**.....Petitioner**

**Vs**

1. Punjab State Power Corporation Ltd,  
The Mall, Patiala-147001

2. (a) Dakshin Haryana Bijili Vitaran Nigam Ltd,  
(b) Uttar Haryana Bijili Vitaran Nigam Ltd  
Shakti Bhawan, Sector -6  
Panchkula – 134 109 (Haryana)

3. Uttar Pradesh Power Corporation Ltd  
Shakti Bhawan, 14, Ashok Marg,  
Lucknow – 226001(Uttar Pradesh)

4. Delhi Transco Ltd,  
Shakthi Sadan, Kotla Road,  
New Delhi-110002

5. BSES-Rajdhani Power Ltd  
BSES Bhawan, Nehru Place,  
New Delhi – 110019

6. BSES-Yamuna Power Ltd.,  
3 rd Floor, Shakti Kiran Building,  
Karkardooma, Near Court  
Delhi- 110092



7. Tata Power Delhi Distribution Ltd.,  
Grid Sub-station Building, Hudson Lines,  
Kingsway Camp, Delhi-110009

8. Engineering Department,  
Chandigarh Administration  
1<sup>st</sup> Floor, UT Secretariat, Sector, 9-D  
Chandigarh-160009

9. Uttarakhand Power Corporation Ltd,  
Urja Bhawan, Kanwali Road,  
Dehradun-248001(Uttarakhand)

10. Himachal Pradesh State Electricity Board,  
Vidut Bhavan, Kumar House  
Shimla-171004 (Himachal Pradesh)

11. (a) Jaipur Vidyut Vitaran Nigam Ltd.,  
(b) Ajmer Vidyut Vitaran Nigam Ltd.,  
Vidut Bhawan, Janpath,  
Jyoti Nagar, Jaipur-302005(Rajasthan)

12. Jodhpur Vidyut Vitaran Nigam Ltd.,  
New Power House,  
Industrial Area, Jodhpur-342003

13. Power Development Department,  
Government of J& K,  
Civil Secretariat,  
Jammu-180001 (J&K)

....Respondents

**For Petitioner:**

Shri M.G.Ramachandran, Advocate, THDC  
Ms. Anushree Bardhan, Advocate, THDC  
Ms.Poorva Saigal, Advocate, THDC  
Shri Manoj Kumar Tyagi, THDC  
Shri S.M.Siddiqi, THDC  
Shri Rajeev Jain, THDC  
Shri R.Sanjeev, THDC  
Shri H. Chakraborti, THDC

**For Respondents:**

Shri Padamjit Singh, PSPCL  
Shri R.B.Sharma, Advocate, BRPL  
Shri Sanjeev Srivastava, BRPL

**ORDER**

The petitioner, THDC India Ltd, a joint venture company of Govt of India and the Govt. of U.P., has filed this petition for approval of generation tariff of Koteswar Hydroelectric Project ('the generating station') for the period from 1.4.2011 to 31.3.2014 in terms of the Central

Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 ('the 2009 Tariff Regulations').

2. The generating station, located in the State of Uttarakhand is part of Tehri Hydro Power Complex which comprises of Tehri Hydro Power Project, Stage-I (1000 MW) (*already commissioned*), Tehri Pumped Storage Plant (1000 MW) (*under construction*) and downstream Koteshwar Hydroelectric Project (400 MW) (*commissioned*). Thus, the entire Tehri Power Complex is scheduled to have an aggregate capacity of 2400 MW. The Koteshwar reservoir will function as lower reservoir for Tehri Pumped Storage Plant and regulate the water releases from main Tehri reservoir for irrigation & drinking water requirements purpose.

3. The generating station comprises of four units with a capacity of 100 MW each. The dates of commercial operation of these units of the generating station are as under:

Unit-I	1.4.2011
Unit-II	26.10.2011
Unit-III	13.2.2012
Unit-IV	1.4.2012

4. The petitioner has entered into Power Purchase Agreements with the respondents for the capacity generated from the project. The power allocation from the generating station had been notified on 8.8.2007 by the Ministry of Power, Govt. of India.

5. Presently, for the energy produced from the generating station, the petitioner is billing to the beneficiaries at 80% of the annual fixed charges, on provisional basis, subject to adjustment after determination of tariff by this Commission, in accordance with the decision taken in the 18<sup>th</sup> TCC and 20<sup>th</sup> NRPC meetings held on 28.2.2011 and 1.3.2011 respectively and in the 19<sup>th</sup> TCC and 21<sup>st</sup> NRPC meetings held on 1.6.2011 and 2.6.2011 respectively.

6. The petitioner had filed this petition during March, 2012 for approval of tariff of the generating station for the period from 1.4.2011 to 31.3.2014, based on the commercial

operation of Units I and II on 1.4.2011 and 26.10.2011 respectively and the anticipated commissioning of the balance two units on 1.3.2012 and 1.5.2012 respectively.

7. Thereafter, the petitioner vide its affidavit dated 2.2.2013 has submitted revised tariff filing forms (Forms 1 to 16) based on the actual dates of commercial operation of all the four units of the generating station. Accordingly, the annual fixed charges claimed by the petitioner are as under:

(₹ in lakh)	
2011-12	40942
2012-13	51545
2013-14	51033

8. The respondents, PSPCL, UPPCL and BRPL have filed their replies to the petition and the petitioner has filed its rejoinder to the same. The petition was listed for directions on 15.4.2014 and the petitioner submitted that all information as sought for by the Commission has been filed and copies served on the respondents. Accordingly, the petitioner prays that tariff of the generating station may be determined.

### **Capital Cost**

9. The project was originally approved by Ministry of Power, Govt. of India, at an estimated cost of ₹130156 lakh including IDC of ₹19004 lakh on 10.4.2000, at October, 1999 price level with a completion period of 5 years. However, the generating station was declared under commercial operation on 1.4.2012, resulting in time overrun of 7 years.

10. The petitioner has submitted that the Revised Cost Estimate (RCE) at December, 2008 price level was submitted in July, 2009. It has also been submitted that RCE for an amount of ₹239839 lakh (including IDC & FC of Rs.34934 lakh) at June, 2009 price level including ₹16000 lakh spent in risk and cost has been vetted by CEA in April, 2010. The petitioner has further submitted that the scenario changed after flooding of the project in September, 2010 and RCE was reworked after incorporating the decisions taken by the Standing Committee during its three meetings held on 4.8.2010, 5.4.2011 and 7.2.2012 and losses due to flooding of the project in September, 2010. The petitioner has stated that RCE was worked out to ₹228368

lakh at June, 2009 price level, including IDC and FC of ₹38546 lakh plus contingent liabilities amounting to ₹54800 lakh as provisionally assessed on account of arbitral award and did not include contingent assets/claims re-coverable on account of ₹16000 lakh incurred by the petitioner at risk and cost of the contractor as on 30.6.2009 and ₹2450 lakh recoverable as insurance claims as initially assessed for damages caused due to flooding. The petitioner has clarified that the expenditure of ₹16000 lakh towards risk and cost, shall be offset against the claims of the contractor, subject to the decision of the High Court and the claim recoverable from insurance shall be capitalized towards settlement of insurance claim.

11. Thereafter, the petitioner submitted the Revised Cost Estimate for ₹272196 lakh including IDC & FC of Rs 38388 lakh at June, 2012 price level to the Ministry of Power, Govt. of India during November, 2012, based on decision taken in the fourth meeting of the Standing Committee on 18.7.2012. According to the petitioner, this RCE amount did not include contingent liabilities of ₹42067 lakh on account of Arbitral award and ₹20155 lakh recoverable on account of risk and cost as on 30.6.2012 and ₹3122 lakh as insurance claim on account of expenditure incurred due to damages caused by flooding. The petitioner vide affidavit dated 9.1.2013 has submitted that the infirm power amounting to ₹12.11 lakh for 2010-11 has been reduced from the capital cost.

12. The petitioner vide its affidavit dated 2.2.2013 has submitted the revised tariff filing forms. In Form 5-B of the said affidavit, the asset wise details of the capital expenditure as on COD of Unit-I (31.3.2011), Unit-IV (31.3.2012) and the additional expenditure capitalized on COD of Unit Nos. II & III, duly certified by auditor has been submitted. The unit-wise capital expenditure claimed by the petitioner is as under:

	(₹ in lakh)	
	<b>Unit-wise Capital Expenditure</b>	<b>Capital cost</b>
1.4.2011 (COD of Unit-I)	20.12.91(₹188986 lakh till 31.3.2011+ ₹12305 lakh till 31.3.2012)	201291
26.10.2011(COD of Unit-II)	₹14293 lakh (₹.12861 lakh till 31.3.2011+ ₹1432 lakh till 31.3.2012 )	215584
13.2.2012 (COD of Unit-III)	₹143.24 lakh (₹12849 lakh till 31.3.2011 + ₹1475 lakh till 31.3.2012)	229908
1.4.2012 (COD of Unit-IV)	₹.13802 lakh (₹100.26 lakh till 31.3.2011+ ₹3776 lakh till 31.3.2012)	243710

13. The capital cost as above claimed by the petitioner on COD of different units represents the capital expenditure for different units till 31.3.2012 and as such does not represent the expenditure on respective date of commercial operation of the units.

14. Pending approval of RCE by the Govt. of India, the petitioner, in compliance with the directions of the Commission during the proceedings held on 27.8.2013 has by affidavit dated 17.10.2013 submitted the recommendations of CEA finalizing the RCE amount claimed by the petitioner. In terms of this, the CEA has finalized the RCE of the project as ₹238641 lakh including actual IDC & FC of ₹ 38388 lakh as on COD (March, 2012) of the generating station as against the RCE amount of ₹255879 lakh submitted by the petitioner for approval of Ministry of Power, Govt. of India. However, the details of items/works and the corresponding cost which had not been considered by CEA while finalizing the RCE amount of ₹238641 lakh has not submitted by the petitioner.

#### **Time and cost overrun**

15. The project was sanctioned in April,2000 for its scheduled commissioning in March 2005. However, actual commissioning of the station has taken place in April 2012, causing delay of 7 years (84 months). The petitioner has stated following reasons for time overrun of 84 months:

<b>Reasons</b>	<b>Months</b>
Civil contract award process, Land acquisition for Rehabilitation & Resettlement of Pendaras village on main dam site and non-vacation of borrow areas for construction material located at village Mulani & Gerogisera. Contract for civil works was awarded 31.08.2002, village Pendaras could be evacuated in April, 2005 & village Mulani & Gerogisera could be evacuated in March, 2007.	46
Geological reasons & restriction on excavation of PH	22
Rock ledge failure in u/s of PH above the penstock	4
Extra time due to increase in volume of work	8
Flooding of Koteswar project due to heavy rains on 21.9.2010	4
<b>Total</b>	<b>84 months</b>

#### **Submissions of respondents**

16. The learned counsel for the respondent, BRPL submitted that the tariff of the generating station may be determined considering the sanctioned capital cost of ₹130156 lakh including IDC. He also submitted that the methodology of limiting tariff to the sanctioned cost has been

adopted by the Commission in respect of tariff of other hydro generating stations and the same may be considered in the instant case. The learned counsel also contended that the tariff may be trued up after RCE is approved by the Central Government and is submitted to the Commission. As regards time & cost overrun, the learned counsel submitted that the project has been declared under commercial operation with a delay of about 7 years and since this issue needs detailed examination, the Commission may await the result of appraisal of PIB and CCEA on time overrun. The respondent, PSPCL submitted that in the absence of approved cost estimate, the tariff may be finalised on the basis of 80% of the capital cost as claimed by the petitioner. The respondent, UPPCL has submitted that the Commission may like to decide the provisional tariff after prudence check of the capital cost claimed by the petitioner in view of the parameters mentioned therein. In response, the learned counsel for the petitioner has clarified that the Commission may consider the grant of provisional tariff for the generating station based on the revised capital expenditure of ₹254634 lakh (inclusive of IDC & EDC upto 1.4.2012) as per audited accounts, subject to the determination of final tariff based on the approved cost. He also submitted that detailed justification as regards time overrun has been submitted and the same may be considered.

17. In response to the query by the Commission as to whether the tariff of the generating station could be determined based on the Techno-Economic clearance by CEA, considering the fact that the tariff period 2009-14 is to expire, the learned counsel for the respondent, BRPL pointed out that the Commission in respect of hydro generating stations namely, Teesta Stage-V had determined tariff limited to the sanctioned cost in the absence of approved RCE and submitted that the same principle may be adopted in the present case. He also submitted that the respondent has no objection to the grant of tariff based on the sanctioned cost including IDC, subject to truing up based on the approved Revised Cost Estimate as and when submitted by the petitioner.

18. The matter has been examined. As regards the reasons of time overrun furnished by the petitioner above, *prima facie* it appears that the factors were beyond the control of the

petitioner. However, as regards the flooding of Koteswar project due to heavy rains, the report of the CEA has categorically pointed out that diversion planning was not sufficient for possible flood events. As regards the cost overrun, the original approved cost was ₹130156 lakh sanctioned in April, 2000 and the cost finalised by CEA and submitted to the Govt. of India as on COD of the generating station is ₹238641 lakh, thereby resulting in a cost overrun of ₹108485 lakh, which works out to 83% of the original approved cost.

19. It is noticed that the petitioner in original petition had submitted the details of cost overrun up to RCE cost of ₹228368 lakh at June, 2009 Price Level *vis-à-vis* the original approved cost. However, the details of cost overrun up to final RCE amount submitted to Ministry of Power, Govt. of India have not been furnished by the petitioner. In the absence of this, the detailed analysis of time & cost overrun could not be made in order to arrive at the capital cost for the purpose of final tariff. The detailed justification/reasons for time and cost overrun of the project will however be considered at the time of determination of final tariff of the generating station, along with the approved RCE by the Central Government. It is also noticed that the petitioner has not initiated any action for selection of a designated agency for vetting of capital cost of the project.

20. As regards the submission of the respondent BRPL for consideration of the sanctioned cost of the project for purpose of tariff as adopted in the case of Teesta-V generating station of NHPC Ltd, we notice that in our order dated 5.1.2010 in Petition No.132 of 2009 (in respect of Teesta HE Project Stage-V), the actual cost as on the date of commercial operation (10.4.2008) of the generating station had been considered by the Commission as against the original sanctioned cost of ₹250049.90 lakh (at April 1999 Price Level) and the RCE of ₹281208.65 lakh submitted by the petitioner for approval of Govt. of India. Hence, the contention of the respondent, BRPL cannot be accepted. It is further noticed that in respect of Chutak HEP, Nimoo Bazgo HEP and Chamara HEP Stage-III of NHPC Ltd, wherein RCE was yet to be approved by the Central Government and where Time and Cost overrun were involved, the Commission by its orders dated 1.4.2013, 7.10.2013 and 13.8.2012 in Petition No.3/GT/2013,



Petition No.89/GT/2013 and Petition No. 22/GT/2011 respectively, had granted provisional tariff based on 85% of the actual capital cost as per audited balance sheet as furnished by the petitioner. In the instant case, the original approved cost (sanctioned on 10.4.2000) of the project was ₹130156 lakh, including IDC of ₹19004 lakh at October, 1999 price level. Admittedly, there has been increase in the project cost. As against the RCE of ₹255879 lakh submitted by the petitioner for approval of Ministry of Power, Govt. of India, the RCE amount of ₹238641 lakh as on COD of the generating station has been recommended by CEA to the Govt. of India. Even if the original approved cost is considered for determination of tariff, the same would result in the recovery of huge amounts as arrears, causing burden on the beneficiaries, after final tariff of the generating station is determined based on RCE approved by the Central Government. Besides, there may not be sufficient cash available with the generator to service the debt obligation. It is observed that RCE of ₹238641 lakh as on COD of the generating station as recommended by CEA to the Govt. of India, is lower in comparison to the RCE amount of ₹255879 lakh submitted by the petitioner for the approval of Ministry of Power, Govt. of India. Considering the above factors in totality and in the absence of final approval of RCE by Central Government, we propose to grant provisional tariff for the generating station based on 85% of the actual capital expenditure incurred as per audited balance sheet amounting to ₹236405.71 lakh as on 31.3.2012, which is less than the CEA approved cost of ₹238641 lakh. We order accordingly.

21. The additional capital expenditure claimed by the petitioner has not been considered for provisional tariff, as it would lead to increase in the capital cost beyond the CEA approved cost.

22. Based on the above discussions, provisional tariff considering 85% of the capital cost of ₹236405.71 lakh as per balance sheet as on 31.3.2012, has been allowed Accordingly, the unit-wise capital cost after apportioning the capital cost of ₹200944.85 lakh (85% of ₹236405.71 lakh) equally between the four units has been considered for the purpose of provisional tariff of the generating station as summarised hereunder:

(₹ in lakh)

	Capital Cost (@ 85%)
Unit-I	50236.21
Unit-II	100472.43
Unit-III	150708.64
Unit-IV	200944.85

### Debt-Equity Ratio

23. The debt equity ratio of 76.76: 23.24 as claimed by the petitioner has been considered for the purpose of provisional tariff as per proviso to clause (1) which provides that where equity actually deployed is less than 30% of the capital cost, the actual equity is to be considered for determination of tariff.

### Return on Equity

24. Return on Equity has been computed by taking the Base Rate of 15.5% in terms of Regulation 15 of the Tariff Regulations 2009. The petitioner is entitled to Return on Equity as under:

	1-4-2011 to 25-10-2011	26-10-2011 to 12-2-2012	13-2-2012 to 31-3-2012	1-4-2012 to 31-3-2013	(₹ in lakh) 2013-14
	(Unit I)	(Unit I & II)	(Units I to III)	(Units I to IV)	(all units)
Gross Notional Equity	11674.90	23349.79	35024.69	46699.58	46,699.58
Addition due to Additional Capitalisation	-	-	-	-	-
Closing Equity	11674.90	23349.79	35024.69	46699.58	46699.58
Average Equity	11674.90	23349.79	35024.69	46699.58	46699.58
Return on Equity (Base Rate )	15.500%	15.500%	15.500%	15.500%	15.500%
Tax rate (MAT)	11.330%	11.330%	11.330%	11.330%	11.330%
Rate of Return on Equity	17.481%	17.481%	17.481%	17.481%	17.481%
<b>Return on Equity</b>	<b>1159.85</b>	<b>1226.76</b>	<b>802.97</b>	<b>8163.55</b>	<b>8163.55</b>

### Interest on Loan

25. The petitioner's entitlement to interest on loan has been worked out in accordance with Regulation 16 of the 2009 Tariff Regulations. The calculations in support of Interest on Loan are as under:

(₹ in lakh)

	1-4-2011 to 25-10-2011	26-10-2011 to 12-2-2012	13-2-2012 to 31-3-2012	1-4-2012 to 31-3-2013	2013-14
	(Unit I)	(Unit I & II)	(Units I to III)	(Units I to IV)	(all units)
Gross Normative Loan	38561.31	77122.64	115683.95	154245.27	154245.27
Cumulative Repayment upto Previous Year	0.00	1346.20	2770.06	3702.04	13352.28
Net Loan-Opening	38561.31	75776.44	112913.89	150543.23	140892.99
Repayment during the year	1346.20	1423.86	931.98	9650.24	9791.22
Addition due to Additional Capitalisation	-	-	-	-	-
Net Loan-Closing	37215.12	74352.58	111981.91	140892.99	131101.78
Average Loan	37888.22	75064.51	112447.90	145718.11	135997.38
Weighted Average Rate of Interest on Loan	11.1700%	11.1700%	11.1700%	11.1700%	11.1700%
<b>Interest</b>	<b>2405.14</b>	<b>2519.99</b>	<b>1647.27</b>	<b>16276.71</b>	<b>15190.91</b>

### Depreciation

26. The weighted average rate of depreciation of 11.1700% calculated in accordance with Regulation 17 has been considered for the calculation of depreciation component of tariff. The petitioner's entitlement to depreciation has been worked out as under:

(₹ in lakh)

	1.4.2011 to 25.10.2011	26.10.2011 to 12.2.2012	13.2.2012 to 31.3.2012	1.4.2012 to 31.3.2013	2013-14
	(Unit I)	(Unit I & II)	(Units I to III)	(Units I to IV)	(all Units)
Gross Block as on 31.3.2009	50236.21	100472.43	150708.64	200944.85	200944.85
Additional capital expenditure during 2009-14	0.00	0.00	0.00	0.00	0.00
Closing gross block	50236.21	100472.43	150708.64	200944.85	200944.85
Average gross block	50236.21	100472.43	150708.64	200944.85	200944.85
Land Related Cost	115.45	230.89	346.34	461.78	461.78
Rate of Depreciation	4.72%	4.72%	4.72%	4.80%	4.87%
Depreciable Value @90%	45108.69	90217.38	135326.07	180434.76	180434.76
Remaining Depreciable Value	45108.69	88871.19	132556.01	176732.72	167082.49
<b>Depreciation</b>	<b>1346.20</b>	<b>1423.86</b>	<b>931.98</b>	<b>9650.24</b>	<b>9791.22</b>

### O&M expenses

27. Sub-clause (v) of clause (f) of Regulation 19 of the Tariff Regulations, 2009 which makes provisions for the generating company's entitlement to O & M expenses in respect of hydro generating stations declared under commercial operation on or after 1.4.2009 is extracted hereunder:

*“(v) In case of the hydro generating stations declared under commercial operation on or after 1.4.2009, operation and maintenance expenses shall be fixed at 2% of the original project cost (excluding cost of rehabilitation & resettlement works) and shall be subject to annual escalation of 5.72% per annum for the subsequent years.”*

28. The petitioner has claimed the following O&M expenses:

	<i>(₹ in lakh)</i>		
	<b>2011-12</b>	<b>2012-13</b>	<b>2013-14</b>
O&M expenses	4117	5189	5304

29. O&M expenses at the rate of 2% of the admitted capital cost, along with proportionate R&R cost has been considered. The petitioner's entitlement to O&M expenses works out as under:

	<i>(₹ in lakh)</i>			
	2011-12			2012-13
	1.4.2011 to 25.10.2011	26.10.2011 to 12.2.2012	13.2.2012 to 31.3.2012	1.4.2012 to 31.3.2013
	(Unit I)	(Unit I & II)	(Units I to III)	(Units I to IV)
O & M Expenses (period basis)	<b>561.33</b>	<b>593.72</b>	<b>388.61</b>	<b>3950.91</b>
				<b>4176.90</b>

### **Interest on Working Capital**

30. The petitioner is entitled to claim interest on working capital as per Regulation 18 of the Tariff Regulations 2009. The components of the working capital and the petitioner's entitlement to interest thereon are discussed hereunder.

#### **(i) Receivables**

As per Regulation 18(1)(c)(i) of the Tariff Regulations 2009, receivables as a component of working capital will be equivalent to two months' of fixed cost. The petitioner has claimed the receivables on the basis of 2 months' of annual fixed charges claimed in the petition. In the tariff being allowed, receivables have been worked out on the basis of 2 months' fixed charges.

### **(ii) Maintenance spares**

Regulation 18 (1)(c)(ii) of the tariff regulations provides for maintenance spares @ 15% per annum of the O & M expenses as part of the working capital from 1.4.2009. The value of maintenance spares has accordingly been worked out.

### **(iii) O & M expenses**

Regulation 18(1) (c)(iii) of the tariff regulations provides for operation and maintenance expenses for one month to be included in the working capital. The petitioner has claimed O&M expenses for 1 month of the respective year. This has been considered in the working capital.

### **(iv) Rate of interest on working capital**

In accordance with clause (3) of Regulation 18 of the tariff regulations, as amended, rate of interest on working capital shall be on normative basis and shall be equal to the SBI Base Rate as on 1st April of the year in which the generating station or a unit thereof is declared under commercial operation, plus 350 basis points. In the instant case, SBI Base Rate was 8.25% on 1.4.2011 and 10.00% as on 1.4.2012. Accordingly, the rate of interest of 11.75% for 2011-12 (COD of first three units) and 13.50% from 1.4.2012 has been considered for the purpose of Interest on Working Capital.

31. Necessary computations in support of interest on working capital are appended hereunder:

	1.4.2011 to 25.10.2011	26.10.2011 to 12.2.2012	13.2.2012 to 31.3.2012	1.4.2012 to 31.3.2013	(₹ in lakh) 2013-14
	(Unit I)	(Unit I & II)	(Units I to III)	(Units I to IV)	(all Units)
Maintenance Spares	84.20	89.06	58.29	592.64	626.54
O & M expenses	46.78	49.48	32.38	329.24	348.08
Receivables	932.92	982.68	642.84	6,507.39	6,386.04
Total	1063.90	1121.21	733.51	7429.27	7360.66
Rate of Interest	11.75%	11.75%	11.75%	13.50%	13.50%
<b>Interest on working capital</b>	<b>125.01</b>	<b>131.74</b>	<b>86.19</b>	<b>1002.95</b>	<b>993.69</b>

## Annual Fixed Charges

32. The Annual Fixed Charges approved for the generating station are summarized as under:

(₹ in lakh)

	2011-12			2012-13	2013-14
	1-4-2011 to 25-10-2011	26-10-2011 to 12-2-2012	13-2-2012 to 31-3-2012	1-4-2012 to 31-3-2013	
	(Unit I)	(Unit I & II)	(Units I to III)	(Units I to IV)	(all Units)
Return on Equity	1159.85	1226.76	802.97	8163.55	8163.55
Interest on Loan	2405.14	2519.99	1647.27	16276.71	15190.91
Depreciation	1346.20	1423.86	931.98	9650.24	9791.22
Interest on Working Capital	125.01	131.74	86.19	1002.95	993.69
O & M Expenses	561.33	593.72	388.61	3950.91	4176.90
<b>Total</b>	<b>5597.52</b>	<b>5896.08</b>	<b>3857.03</b>	<b>39044.37</b>	<b>38316.27</b>

## Design Energy

33. The petitioner has claimed design energy of 680.94 Million Units for the year 2011-12 and 1154.82 MU for the years 2012-13 and 2013-14. The learned counsel for respondent BRPL has pointed out that the petitioner vide its affidavit dated 19.1.2013 has claimed design energy of 1154.82 MU as against the design energy of 1234 MUs claimed while seeking the Techno-Economic Clearance of the project from the CEA. He has further submitted that subsequent to the TEC, the petitioner has again approached the CEA with the revised inflow series data as against the data provided at the time of TEC granted by the CEA. Accordingly, the learned counsel while objecting to the above, has submitted that the design energy as set out in the TEC of CEA may be considered for purpose of tariff.

34. The petitioner vide its affidavit dated 13.8.2013 has clarified that the design energy of the project at DPR stage was approved by CEA as 1234 MU in 90% dependable year i.e., 1974-75 which was based on the hydrological series 1930-31 to 1990-91, duly approved by CWC. It has pointed out that in the meanwhile, the design energy of Tehri HEP of the petitioner was approved by CEA as 2797 MUs based on the updated hydrological series which included the inflow data from 1964-65 to 2006-07 vetted by CWC. The petitioner has added that based on this series, the design energy of this project was worked out as 1154.82 MU corresponding to 90% dependable year 2004-05 which was approved by CEA on 6.8.2012. We have

considered this issue and agree with the submissions of the petitioner. Since CEA has approved the annual design energy of 1154.82 MU in a 90% dependable year, the same has been allowed for the purpose of provisional tariff for the full year operation during 2012-13 and 2013-14. However, the design energy of 680.94 MU for the year 2011-12 as calculated and claimed by the petitioner is not found to be in order. Accordingly, the same has been re-calculated, based on COD of various units during the year 2011-12 and planned outages considered by the petitioner based on 'Operation & Maintenance Manual of Turbine' of OEM i.e BHEL which works out to 712 MU. The same is allowed.

35. Accordingly, the month-wise details of design energy as approved by CEA for operation during the years 2012-13 and 2013-14 is as under:

Month	Period	Design Energy (MU)
April	i	29.81
	ii	30.60
	iii	35.61
May	i	40.11
	ii	18.21
	ii	18.21
June	iv	42.81
	i	40.01
	ii	42.02
July	iii	12.6
	i	13.6
	ii	14.1
August	iii	20.41
	i	52.12
	ii	51.11
September	iii	67.73
	i	31.51
	ii	33.41
October	iii	20.31
	i	22.91
	ii	19.61
Nov.	iii	14.9
	i	18.91
	ii	19.6
December	iii	20.31
	i	32.5
	ii	33.41
January	iii	37.81
	i	35.8
	ii	36.41
February	iii	41.82
	i	39.42
	ii	32.01
	iii	28.31

March	i	35.31
	ii	17.9
	ii	17.9
	iii	35.71
<b>Total</b>		<b>1154.82</b>

### **Normative Annual Plant Availability Factor (NAPAF)**

36. The petitioner has claimed NAPAF of 61.51% for the year 2011-12 and 64% for the years 2012-13 and 2013-14. The petitioner, as envisaged in the approved DPR, has calculated NAPAF based on running of one machine constantly for 24 hrs on full load, for maintaining the downstream flow as per the requirements of Irrigation Department of the State of U.P. We notice that the calculations made are based on the on the presumption that one machine of the generating station is operated for 24 hours and the remaining available machines are operated to carry out peaking of 3 hours in two slots of 1.5 hours each in the morning and evening, based on outflows from Tehri HPP. However, as per calculations for the full year operation during the years 2012-13 and 2013-14, the NAPAF works out to 67%. Against the claim of 61.51% NAPAF for the year 2011-12, the NAPAF works out to 67% based on inflows for the design year, CODs of various units during the year 2011-12 and planned outages considered by the petitioner based on OEM i.e BHEL's maintenance manual. Accordingly, NAPAF at 67% each for the years 2011-12, 2012-13 and 2013-14 respectively has been allowed.

37. The provisional Annual Fixed Charges determined above shall be recovered *pro rata* to the number of days in commercial operation during the year of the respective units. The petitioner shall recover the energy charges in accordance with Regulation 22 of the Tariff Regulations 2009.

38. The recovery of the Annual Fixed Charges is subject to adjustment after determination of final tariff for the generating station.

Sd/-  
(Neerja Mathur)  
Member (EO)

Sd/-  
(A.K.Singhal)  
Member

Sd/-  
(M. Deena Dayalan)  
Member

Sd/-  
(Gireesh B. Pradhan)  
Chairperson