



# ASSAM ELECTRICITY REGULATORY COMMISSION

FILE NO. AERC. 262/2007/Pt-I

PETITION NO. 07/2012

## ORDER SHEET

12.04.2013

Before the Assam Electricity Regulatory Commission

ASEB Campus, Dwarandhar,  
G. S. Road, Sixth Mile, Guwahati – 781 022

Petition No. 07 /2012

M/s Hayen Hydel Power Company Private Limited (HHPCPL)

— Petitioner

-Vs-

M/s. Assam Power Distribution Company Limited. (APDCL)

— Respondent

### In the matter of

Redetermination of tariff for the  
FY 2010-11 for sale of 4.05 MW (2 x  
2.025) from Champamathi Small Hydro  
Project of HHPCPL set-up in the  
Chirang district of BTAD to APDCL.

### Order

#### **1. Background**

The Petitioner, M/s Hayen Hydel Power Company Pvt. Limited (HHPCPL) is a special purpose vehicle company promoted by M/S Bodoland Infrastructure Development Company Limited a joint venture Company of Infrastructure Leasing & Financial Service Limited (IL&FS), New Delhi and Bodoland Territorial Council (BTC), Kokrajhar.

In the year 2007, the petitioner proposed to implement a 2.25 MW (3 x 0.75) Small Hydro Project (SHP) as a run-off river project on Champamathi Irrigation Barrage scheme located in the Chirang District of Assam near village Nangdalbari under BTAD. The petitioner, accordingly, approached the Commission vide their tariff petition dated 20.04.2007 for approval of tariff for the project @ Rs. 3.20 per kWh.

The Commission after detailed scrutiny and examination issued a tariff order dated 12.07.2007 approving a levellised tariff of Rs.3.19/KWh for a period of 35 years. The tariff was determined as per AERC Tariff Regulations 2006, considering capital cost of Rs. 1723.90 lakh.

Consequent to the issue of the Tariff Order, HHPCPL informed APDCL that capacity of the project was enhanced from 2.25 MW to 4.05 MW (2 x 2.025) with the approval of BTC. The same was intimated to the Commission on 03.08.2007. They also forwarded a copy of Detailed Project Report (DPR) to APDCL with a request for suggestion regarding modification of the M.O.U., if necessary.

HHPCPL approached the Commission again vide their letter dated 17.01.2011 with a request to review of the tariff order dated 12.07.2007 in order to revise the tariff to Rs. 3.90/Kwh as per CERC order dated 03.12.2009 for SHP (<5 MW) for North East states for the FY 2009-10 for the following reasons:

1. The project cost has increased to Rs. 3150 lakh from Rs. 1723.90 lakh due to selection of higher capacity (4.05 MW).
2. Higher input cost due to time overrun owing to insurgency and other local problem and other reasons stated in their letter mentioned above.
3. Additional capital cost mainly for deployment of 6 pump sets to overcome problem of water seepage which resulted in an additional cost of Rs 2 Crs. and construction of independent dedicated 11 KV Double Circuit transmission line at a cost of Rs. 80 lakhs.

HHPCPL informed vide the above mentioned letter that the up-gradation of the power project was done to facilitate maximum production during higher inflow of water for 4 months in a year, so as to augment additional supply to the power starved state.

The Commission forwarded a copy of the above mentioned letter along with all relevant submissions to APDCL on 21.07.2011 for their comments on the proposal. Simultaneously, the Commission directed HHPCPL to file a formal petition on the matter before the Commission in accordance with AERC (Conduct of Business) Regulations, 2004.

APDCL submitted their comments vide letter dated 23.09.2011 with an appeal to the Commission not to consider their proposal for revision of already approved tariff. From the submission of APDCL, it was revealed that PPA was already signed between the project developer and APDCL on 07.01.2011. From the submissions so far received from both HHPCPL and APDCL, the status of the project was not known to AERC. However, it could be gathered that the project was already commissioned on 01.11.2010 and it is in commercial operation.

HHPCPL submitted a formal petition dated 17.11.2011 to the Commission along with the following documents.

1. PPA dated 07.01.2011 signed with APDCL.
2. Extract of CERC Renewable Energy Tariff Regulations, 2009.
3. Extract of draft AERC Renewable Energy Tariff Regulations, 2009.
4. Detailed tariff calculation sheet

The contents of the formal petition are more or less the same as of their earlier submissions under letter dated 17.01.2011. However, there were a few additional submissions, such as, inclusion of capital cost of one 5

MVA Power Transformer as advised by APDCL and prayer for approval of revised tariff of Rs. 4.46/kWh as per CERC (Renewable Energy) Tariff Order dated 03.12.2009 for the FY 2009-10. The petitioner also requested that the project developer may be allowed to retain the entire benefit of carbon credit and not on 50:50 basis stipulated on the order of the Commission dated 12.07.2007.

A copy of the petition was also submitted to APDCL (Respondent). The Chief General Manager (Commercial), APDCL vide his letter dated 05.06.2012 submitted their comments on the petition as under:

1. The petitioner may be directed to demonstrate the full generation of the project up to its rated capacity of 4.05 MW during the high hydro period to establish the machine capacity.
2. To examine the calculation of tariff @ Rs. 2.87/kWh as submitted by APDCL and adopt the lower one between the existing tariff and the calculation submitted by APDCL after necessary vetting by the Commission.
3. Pass any such order which the Commission deems fit and just in the interest of justice based on the prevalent norms and circumstances.

## **2. Legal and Regulatory framework:**

**2.1** Under 61(h) of the Electricity Act, 2003, the state Commission shall specify the terms and conditions for determination of tariff for promotion of co-generation and generation of electricity from renewable source of energy including SHP upto 25 MW. Section 61(i) of the Act stipulates that the Commission shall be guided by the National Electricity Policy and Tariff Policy.

**2.2** Section 61(a) of the Act provides that State Regulatory Commissions shall be guided by the principles and methodologies specified by the Central Commission for determination of tariff applicable to generating companies and transmission licensees.

**2.3** Also Section 86(1) (e) of the Electricity Act 2003, mandates the State Electricity Regulatory Commissions to promote co-generation and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person.

**2.4** The clause 5.12.2 of the National Electricity Policy also provides inter-alia, as under:

“Considering the fact that it will take some time before non-conventional technologies compete, in terms of cost, with conventional sources, the Commission may determine an appropriate differential in prices to promote these technologies”.

**2.5** Section 6.4 of the National Tariff Policy dealing with renewable energy sources of energy generation including co-generation, inter-alia, provides as under:

“It will take some time before non-conventional technologies can compete with conventional sources in terms of cost of electricity. Therefore, procurement by distribution companies shall be done at preferential tariffs determined by the Appropriate Commission.”

### **3. Hearing of the petition:**

The Commission examined the submissions made by the petitioner and Respondent carefully and admitted the petition on 09.07.2012 as Petition No. 7/2012. A hearing was fixed on 18.07.2012 after due notices to the parties concerned.

The Chairperson AERC initiated the hearing with a brief background of the case. He then asked both the parties to submit additional comments and observations on the issue, if any.

The respondent contended that although the capacity of the project has been increased, the annual energy generated remains the same so far. It was stated that the energy generated from the project during the period November, 2010 to March' 2011 was 2.616 MU and in FY 2011-12 was 6.79 MU only. Therefore, the Commission was requested to direct the petitioner to demonstrate the generation of the project up to the full rated capacity in high hydro period as per guidelines of AERC/CERC Regulations. It was further stated that since both the project costs as well as the design energy were enhanced in the same ratio, therefore, tariff should remain almost the same as determined by the Commission in its earlier order dated 12.07.2007. The respondent contended that as per the AERC (Co-generation and Generation of Electricity from Renewable Sources of Energy) Regulations, 2009, the capped tariff applicable for such small hydro project is Rs 3.20/ KWh, therefore, the present tariff @Rs.3.19/KWh determined by the Commission in its Order dated 12.07.2007 is proper. The respondent stated that it is ready to absorb any additional energy generated from the project if the tariff is reasonable and consumer friendly. It was further contended that CERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2009 clearly states that CDM, Subsidy / incentive benefits are to be shared with the beneficiaries. On the above grounds, the respondent requested the Commission to pass such order as it deems just based on the prevailing rules and regulations. It was further contended that after formation of BTC, the law and order situation in that area has been peaceful and as such, requested the Commission that the petitioner be asked to submit documentary evidence to justify that the delay in commissioning of the project by two years resulting in cost overruns was attributable to factors beyond the control of the project developer.

The petitioner reiterated the reasons for enhancing the capacity of the plant which resulted in cost escalation of the project. The petitioner informed that generation from the project during FY 2011-12 could not be achieved as projected due to 40% rainfall deficit in the North Eastern states and non- availability of Grid during the peak season throughout the whole year resulting in 720 Hrs of generation loss. It was further informed

that grid availability conditions have not been improving till date and for the reasons mentioned above, the energy generated was only 50% of projected generation. Since the tariff for the 2.25 MW Champamathi SHP was determined in 12.07.2007 considering the norms in AERC Tariff Regulations, 2006 which were general guidelines for all hydro projects without any special consideration for SHPs, it was requested that CERC Regulations may be considered while determining tariff for the project. The petitioner informed that Champamathi SHP was the first project of its kind to be commissioned in the North East India as IPP mode. There is an appeal from the petitioner that considering all the above factors, the petition for review of tariff order dated 12.07.2007 and enhancement of tariff may be considered sympathetically.

Meanwhile, the petitioner submitted their observations vide letter dated 18.07.2012 on the submissions made by the Respondent on 05.06.2012. The petitioner vide the same letter also submitted tariff calculation sheets considering different options keeping the key parameters of AERC Tariff Order dated 12.07.2007 unchanged except for the parameters of Depreciation, Plant Load Factor (PLF) and Project Cost wherein, they inter-alia proposed a tariff of Rs. 4.37/kWh considering capital cost of Rs. 31.50 Cr., depreciation @ 7% and PLF @ 42%.

The Commission heard both the parties. The Chairperson AERC stated that the Commission has been entrusted with the responsibility of promoting generation of electricity from renewable sources of energy as per section 86(1)(e) of the Electricity Act 2003 and the importance of renewable energy projects, such as, the Champamathi SHP cannot be denied in a state like Assam suffering from acute power shortage situation.

From the submission of the petitioner, the Commission noted that the project was commissioned in November 2010. The Commission, therefore, directs the petitioner to submit the following data and information for detailed scrutiny and examination of the proposal.

- (i) Details of actual project cost along with additional capitalization, if any and actual technical and financial data for FY 2011-12 along with relevant documents.
- (ii) Submission of documentary evidence to justify that the delay of two years for commissioning of the project was attributable to factors beyond the control of the project developer.
- (iii) Information about the action taken by the petitioner with the Respondent (APDCL) for improvement of grid availability for overall improvement of the PLF of the station.

In response, the petitioner vide their letter dated 24.09.2012 stated with supporting documents that the delay in commissioning of the project was due to law and order problems, frequent-grid failures and inadequate rain fall. They also submitted various input cost elements as additional capital cost with supporting documents like supply/transport invoices etc. for execution of 11 KV DC transmission line complete and hiring and operational cost of pumps for dewatering of seepage water. As directed by

the Commission, APDCL submitted their views and comments vide their letter dated 19.12.2012 on the reply of the petitioner dated 24.09.2012. The Commission has also obtained observation of the petitioner on the comments of APDCL as mentioned above vide their letter dated 09.01.2013.

#### **4. Redetermination of tariff:**

The petitioner has prayed before the Commission for review of the tariff order dated 12.07.2007 and approval of a revised tariff of Rs. 4.46/kWh based on CERC (Renewable Energy) Tariff Order dated 03.12.2009 for FY 2009-10 in view of setting-up of higher capacity SHP of 4.05 MW instead of 2.25 MW as proposed earlier. They also prayed vide their subsequent submissions as mentioned above for consideration of additional capital cost of about Rs. 427.48 lakh in addition to the estimated capital cost of Rs. 3150 lakh as per the DPR.

After careful scrutiny and examination of the technical and financial data and information submitted by the petitioner as mentioned above, the Commission decided for review of the earlier tariff order dated 12.07.2007 under section 94(f) of the Electricity Act, 2003 and redetermine the tariff for 4.05 MW SHP of HHPCPL. Since the plant was put on commercial operation on 12.01.2011, the Commission has deemed it appropriate to determine tariff for FY 2010-11 as per the relevant technical and financial parameters of CERC (Renewable Energy) Tariff Order dated 26.04.2010 for FY 2010-11 based on the CERC (Terms and conditions for tariff determination from renewable sources) Regulations, 2009. While determining the tariff, the Commission has also followed the relevant terms and provisions of AERC (Tariff) Regulations, 2006 and AERC (Renewable Energy) Regulations, 2009.

#### **5. Tariff structure and design:**

The project specific tariff shall be determined having single part tariff of levelled discounted fixed cost for the useful life of 35 years considering the year of commissioning of the project.

#### **6. Operational and financial norms and parameters:**

For redetermination of the tariff, the Commission has adopted the norms and parameters approved by CERC vide their renewable energy tariff order dated 26.04.2010 for FY 2010-11 excepting the norms of capital cost, CUF and O&M expenses.

##### **6.1 Operational norms:**

###### **6.1.1 Capacity Utilisation Factor (CUF):**

The petitioner estimated CUF of 42% for calculation of tariff vide their petition dated 17.11.2011.

The Commission in its tariff order dated 12.07.2007 approved CUF of 40%. The Commission has observed that the CERC adopted CUF of 45% for

SHP of North East states vide CERC (Renewable Energy) Tariff Order dated 26.04.2010. The Commission has noted that the CUF or PLF depends on several factors, such as, technology employed capacity of the machines installed and water availability, depending on rain fall etc.

The Commission has observed that the petitioner has so far generated 2.616 MU at a CUF of 18% during the period November, 2010 to March, 2011 and 6.79 MU at a CUF of 20% during the FY 2011-12. These are far less than the 42% CUF which they have proposed in their tariff petition dated 17.11.2011.

The Commission has approved CUF of 42% as submitted by the petitioner and the petitioner shall be responsible for achieving the targeted CUF.

#### **6.1.2 Auxiliary energy consumption:**

As per the prevailing norms, the Commission has approved the auxiliary energy consumption at 1%.

### **6.2 Financial norms:**

#### **6.2.1 Capital cost:**

The Capital Cost is the most critical element in tariff determination. This comprises of cost of land, plant and machinery, civil works, erection, commissioning, cost associated with power evacuation and other related charges.

The petitioner in its tariff petition dated 17.11.2011 sought a capital cost of Rs. 3150 lakh (Rs. 7.78 Cr./MW) as per the DPR submitted by the petitioner. They vide their letter dated 24.09.2012 also sought the additional capital cost of around Rs. 400.00 lakh including the cost of construction of 11 KV (DC) transmission line, deployment cost of 6 nos. of dewatering pump sets, cost of one 5MVA (11KV/33KV) transformer installed in the Kajalgaon sub-station of APDCL.

#### **Commission's views:**

The project cost varies on account of various factors including location of the project, rating of the units, total capacity, technology, designed capacity utilization factor etc. and therefore, a reasonable project cost needs to be considered on a uniform basis for tariff determination.

The Commission in its order dated 12.07.2007 had considered the capital cost of Rs. 1723.90 lakh (Rs. 7.66 Cr./MW).

Since, the 4.05 MW SHP was commissioned on 01.11.2010, the Commission vide order dated 23.08.2012 directed the petitioner to submit details of actual project cost with additional capitalization, if any, along with relevant supporting documents.

Accordingly, the petitioner vide their letter dated 24.09.2012, inter-alia, submitted the 5<sup>th</sup> annual report of the company for the FY 2010-11 wherein their Chartered Accountant had certified an amount of Rs. 2881 lakh as

capital investment in specified formats for the period from 01.01.2008 to 11.01.2011. The date of commercial operation was certified as 12.01.2011.

The Commission has also noted the subsequent submission of the petitioner vide their letter dated 09.01.2013 wherein an amount of Rs. 3541 lakh was certified on 28.12.2012 as a capital investment upto the date of commercial operation by another Chartered Accountant.

In accordance with regulations 59 read in conjunction with regulation 37 in respect of determination of tariff of the AERC (Tariff) Regulations, 2006, the actual capital expenditure incurred upto the date of commercial operation of generating station duly certified by the statutory auditors based on annual audited accounts shall be the basis for determination of tariff. In view of the above, the Commission has considered after prudence check the value of the capital investment of Rs. 2881 lakh certified by the registered Chartered Accountant dated 30.09.2011 under form no. ID(A)(i) submitted with the 5<sup>th</sup> annual report of the FY 2010-11 of the HHPCPL along with audited financial statements.

The Commission has observed that even though there was time overrun of about 2 years as stated by the petitioner, the actual capital expenditure upto the date of commercial operation as certified by registered CA was Rs. 2881 lakh which is lower than the estimate project cost of Rs. 3150 lakh as per the DPR of May, 2007.

Regarding allowing the additional capital cost of around Rs. 4.00 Cr. as claimed by the petitioner, the Commission has examined in details the relevant financial documents submitted by the petitioner. After prudence check, the Commission has allowed the cost of Rs. 28.00 lakh for one 5 MVA transformer which was purchased and installed by the petitioner after the date of commercial operation.

Keeping in view of the above analysis and prudence check of the total capital cost including the additional capital cost based on data available with the Commission, the Commission is of the view that it would be reasonable to allow the capital cost of Rs. 2909 lakh (Rs. 2881 lakh + Rs. 28 lakh) i.e. 7.18 Cr. per MW upto the date of commercial operation i.e. 12.01.2011 for determination of tariff.

#### **6.2.2 Debt:Equity ratio:**

The Chartered Accountant of the company certified the actual debt and equity amount as Rs. 21.89 Cr. and Rs. 6.92 Cr. respectively in the ratio of 76:24.

In line with clause 5.3(b) of the tariff policy and the CERC (Renewable Energy) Tariff Order dated 26.04.2010, the Commission has approved the Debt:Equity ratio of 70:30 for the 4.05 MW Champamathi SHP of HHPCPL.

#### **6.2.3 Operations & Maintenance (O&M) expenses:**

Operation and Maintenance or 'O&M expenses' shall comprise of repair

and maintenance (R&M), establishment including employee expenses, and administrative and general expenses. The Commission, in its earlier tariff order dated 12.07.2007 had allowed O&M expenditure as 2% of capital cost for the first year and thereafter an increase of 4% every year.

The petitioner sought O&M @ Rs. 21 lakh/MW with 5.72% annual escalation vide their petition dated 17.11.2011.

The Commission has observed that the CERC adopted O&M expenses @ Rs. 22.20 lakh/MW with 5.72% annual escalation for FY 2010-11 vide their order dated 26.04.2010.

**Commission's views:**

The Commission is of the view that normative O&M expenditure of Rs. 21 lakh/MW (2.9%) as per submission of the petitioner shall be considered to enable the developer to maintain the plant in proper condition during its life span in a remote location like Assam. Further, the Commission has decided to allow 5.72% as annual escalation which will provide sufficient financial support to address the inflation aspect.

**6.2.4 Other financial norms:**

The Commission after due consideration has adopted the norms for other financial parameters such as interest on term loan, interest on working capital, depreciation and return on equity as per the CERC (Renewable Energy) Tariff order dated 26.04.2010 for the FY 2010-11 for computation of the tariff.

**7. Determination of tariff:**

In view of the fore-going discussions, the various parameters considered by the Commission for determination of tariff are given in the table below:

<u>Sl. No.</u>	<u>Parameters</u>	<u>Unit</u>	<u>As per tariff order dt. 12.07.2007</u>	<u>As per the petition dt. 17.11.2011</u>	<u>As adopted by the Commission</u>
<b><u>Project cost:</u></b>					
1.	Capital cost including IDC and evacuation cost	Rs. in Lakh/MW	766	877*	718**
2.	Less: capital subsidy	-DO-	—	—	—
3.	Total capex	-DO-	766	877	718
<b><u>Operational and financial norms:</u></b>					
4.	CUF	%	40	42	42
5.	Auxiliary energy consumption	%	1	1.5	1
6.	Debt: Equity ratio		70:30	70:30	70:30

7.	Interest on loan	%	14	14.29	13.39
8.	O&M cost	Rs. in Lakh/MW	2%	21	21
9.	Escalation on O&M	%	4	5.72	5.72
10.	Depreciation	%	2.57	7 upto 10 <sup>th</sup> yr. 0.80 from 11 <sup>th</sup> yr. onwards.	7 upto 10 <sup>th</sup> yr. 0.80 from 11 <sup>th</sup> yr. onwards
11.	ROE	%	14	Pre-tax 19% – 1 <sup>st</sup> 10 yrs. Pre-tax 24% – 11 <sup>th</sup> yr. onwards.	Pre-tax 19% – 1 <sup>st</sup> 10 yrs. Pre-tax 24% – 11 <sup>th</sup> yr. onwards.
12.	Project useful life	years	35	35	35
13.	Interest on working capital	%	10	13.79	12.89

\*Including the additional capital cost claimed by the petitioner vide their submission dated 24.09.2012.

\*\*Including the additional capital cost approved by the Commission.

Considering the above parameters, the Commission has calculated the tariff based on the Discount Rate of 16.14% for FY 2010-11 and approves a discounted levellised tariff of Rs. 4.11/kWh for the useful life of 35 years from the date of commercial operation i.e. 12.01.2011.

The copy of the detailed tariff calculation sheet is annexed herewith as Annexure-1.

## **8. Other applicable conditions:**

### **8.1 Sharing of CDM benefit:**

In the line with CERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2009, the proceeds of carbon credit from approved CDM project shall be shared between generating company and concerned beneficiaries in the following manner, namely :-

a) 100% of the gross proceeds on account of CDM benefit to be retained by the project developer in the first year after the date of commercial operation of the generating station ;

b) In the second year, the share of the beneficiaries shall be 10% which shall be progressively increased by 10% every year till it reaches 50%, where after the proceeds shall be shared in equal proportion, by the generating company and the beneficiaries.

### **8.2 Scheduling**

In the line with CERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2009, the 4.05 MW SHP of HPCPL shall be treated as "MUST RUN" power plants and the same shall not be subjected to "merit order dispatch" principles.

### **8.3 Treatment of subsidy:**

CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2009 provides for consideration of any incentive or subsidy offered by the Central or State Government while determining the tariff by the Commission.

The Commission has noted that even though the petitioner vide their petition dated 17.11.2011 had, inter-alia, mentioned about subsidy of Rs. 2.90 Cr. from the Ministry of New and Renewable Energy (MNRE), Govt. of India, the petitioner vide their submission dated 11.04.2013 informed that HHPCPL has not taken any subsidy till now and also they are not going to avail any subsidy from the MNRE, Government of India.

Considering the above facts, the Commission has deemed it appropriate to calculate the tariff without considering any subsidy or incentive granted by MNRE, GOI or State Govt. etc.

### **8.4 Taxes and duties**

The tariff determined under this order shall be exclusive of taxes and duties as may be levied by the state/central Govt. and the same shall be passed through on actual incurred basis.

### **8.5 Demonstration of full generation capacity:**

The Commission has observed that the Small Hydro Project of HHPCPL (4.05 MW) has been upgraded to 4.05 MW from 2.25 MW as proposed earlier to facilitate maximum generation during higher inflow of water for 4 months in a year. However, the Commission noted that the actual generation for the FY 2011-12 was 6.79 MU only which is almost half of the targeted generation. In this regard, the Commission has also examined the submission of the petitioner, wherein, they stated the reasons for low generation as rainfall deficit, frequent grid failure etc. during the FY 2011-12. In this regard, the Commission has also noted the submission of the respondent who are not in agreement on the submission of the petitioner.

Considering all the facts as mentioned above carefully, the Commission directs HHPCPL to demonstrate the full capacity generation of the station for 3 (three) hours during peaking hours within a 24 hours period during high water availability season.

With the above analysis, observations and decisions, the petition stands disposed of.

Sd/-  
(T. Chatterjee)  
Member, AERC

Sd/-  
(Dr. R. K. Gogoi)  
Member, AERC

Sd/-  
(J. Barkakati)  
Chairperson, AERC