

**Before**

**UTTARAKHAND ELECTRICITY REGULATORY COMMISSION**

**In the matter of:**

Petition no. 01/2009 dated 13.07.2008 and 17.02.2009 filed by Uttarakhand Jal Vidyut Nigam Limited.

.....Petitioner

**And**

**In the matter of:**

Determination of Final Tariff for UJVNL's SHP of capacity above 1 MW and upto 25 MW as per UERC (Tariff and Other Terms for Supply of Electricity from Non-conventional and Renewable Energy Sources) Regulations, 2008.

**Coram**

<b>Shri V.J. Talwar</b>	<b>Chairman</b>
<b>Shri Anand Kumar</b>	<b>Member</b>

**Date of Order: 19.05.2009**

**ORDER**

This Petition has been filed by Uttarakhand Jal Vidyut Nigam Limited (hereinafter referred to as "Petitioner") under section 86 of the Electricity Act, 2003 (hereinafter referred to as "Act") read with relevant regulations and guidelines of the Commission for determination of final tariff for UJVNL's SHP of capacity above 1 MW and upto 25 MW.

**1 Background and Procedural History**

- (2) The Petitioner Company was incorporated on 12th February 2001 pursuant to the provisions of sub-section 4 of Section 63 of The UP Reorganization Act 2000. The Government of India (GoI) vide its order dated November 5, 2001 transferred all the hydropower generating assets located in the State of

Uttarakhand to UJVNL, with effect from November 9, 2001 (hereinafter referred to as "the GoI Order"). The said GoI Order also defines the basis for the division of assets & liabilities between Uttar Pradesh Jal Vidyut Nigam Limited (UPJVNL) and the Petitioner, UJVNL.

- (3) The Petitioner currently owns and operates 24 Small Hydro Plants (SHP's) with total capacity of 53.75 MW, detailed below, at different locations in the State of Uttarakhand. The total capacity of all such SHPs below 1 MW is 5.65 MW, from 1 MW to 5 MW is 18.40 MW and SHPs above 5 MW to 25 MW is 29.70 MW.

**Table: Details of SHPs under control of UJVNL**

Sl. No.	Name of Plant	Capacity (MW) (up to 1 MW)	Capacity (MW) (from 1 MW to 5 MW)	Capacity (MW) (above 5 MW)
1	Barar	0.75		
2	Graon	0.30		
3	Suringad	0.80		
4	Gauri	0.20		
5	Taleshwar	0.60		
6	Charndev	0.40		
7	Septeshwar	0.30		
8	Kotabagh	0.20		
9	Harsil	0.20		
10	Tilwara	0.20		
11	Tharali	0.40		
12	Sonprayag	0.50		
13	Tapowan	0.80		
14	Jummagad		1.20	
15	Chirkila		1.50	
16	Relagad		3.00	
17	Kanchuti		2.00	
18	Kulagad		1.20	
19	Badrinath		1.25	
20	Pilangad		2.25	
21	Urgam		3.00	
22	Galogi		3.00	
23	Pathri			20.40
24	Mohammadpur			9.30
<b>Total</b>		<b>5.65</b>	<b>18.40</b>	<b>29.70</b>
<b>Grand Total</b>		<b>53.75</b>		

- (4) In respect of small hydro generating stations in the State of Uttar Pradesh in the control of UPJVNL (except Pathri and Mohammadpur), the Government of Uttar Pradesh had determined the tariff vide letter no. 1727/P-1/76-24-136/92 TC dated 14.07.1996 @ Rs.2.25/unit. This rate was subsequently scaled down to Rs.1.70/ unit vide UPSEB letter no. 1412/CP/Jal Vidyut dated 08.12.1999.
- (5) A MoU dated 14.01.2000 was also executed by and between UPPCL and UPJVNL whereby UPPCL agreed to purchase power from some of the small hydro projects of UPJVNL @ Rs. 1.70/unit. Subsequently after the creation of the State of Uttarakhand and incorporation of UJVNL by operation of clause 2(d) of the GoI order dated 05.11.2001, the said MoU dated 14.01.2000 between UPPCL and UPJVNL stood assigned to UJVNL.
- (6) The rate of Rs.1.70/unit was also subsequently notified by GoU as per its order dated 22.02.2002, read with letter dated 14.06.2002 and thereafter vide its order dated 11.11.2002.
- (7) The Electricity Act, 2003 which became effective from 10.06.2003, transferred the functions of determination of generation tariff from the State Government to the Commission.
- (8) The Commission issued an Order on 10.11.2005 specifying its Approach to initial tariff for Generating stations with capacity upto 1 MW wherein the option of getting the tariffs determined as the weighted average cost of power allocated to the State from central generating stations or in accordance with the Uttaranchal Electricity Regulatory Commission (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2004 without any relaxations was provided to the generator in case of Micro Hydel generating stations with capacity upto 1 MW.
- (9) The Commission also issued an Order dated 10.11.2005 for all stations having capacities between 1 MW to 25 MW, which was based on cost plus approach but certain norms regarding the cost elements specified in the 2004 Regulations were relaxed by the Commission.
- (10) The Commission vide its notification dated 18.05.2007 amended the above referred order dated 10.11.2005 for capacities upto 1 MW by extending the option to get the tariffs based on avoided cost to hydro generating stations with capacity upto 5 MW.

- (11) The Commission in its first tariff order for UPCL dated 08.09.2003 had directed UPCL to work out the updated rate of power to be purchased from UJVNL and submit the same for Commission's approval by 31.12.2003. However, neither UPCL nor UJVNL approached the Commission to get the generation tariff fixed for the small hydro stations. The Commission was forced to compel the generators to get their tariffs determined. In its tariff order dated 25.04.2005 for UPCL, the Commission observed that:

*"Tariffs of other stations of UJVNL, UREDA and others have not been got determined so far. It may be recalled that under section 62(1)(a) of the Act, the generation tariff for supply of electricity by State generators to State Licensee is to be determined by this Commission. All these generating stations are presently charging tariffs which do not have legal sanctity. For working out the power purchase cost, the Commission has taken their present rates into account but these will be replaced by the rates that the Commission may approve for each of them. **UPCL is hereby directed that if these generating stations do not get their tariffs determined by the Commission even by 30.09.05, then w.e.f. 01.10.05 they will be paid only at the highest rate approved by the Commission for the main generating stations of UJVNL, which is 38.69 p/kWh or the present tariff, whichever is lower.**"*

- (12) The Petitioner filed the applications for determination of tariff for the SHPs on 28.09.2005 which were returned by the Commission as the applications were not supported by details and justifications regarding capital cost and other operational details claimed by the Petitioner. The applications were again re-submitted during 2006 which were returned again by the Commission for the same reasons.
- (13) On the applications submitted by the Petitioner, the Commission vide its order dated 01.12.2006 and 05.04.2007 allowed the tariff on the basis of weighted average cost of Power allotted to the State from Central Generating Station in case of UJVNL SHPs up to 1 MW capacities listed in S. No. 1 to 13 in Table 1 given above.
- (14) Subsequently, the Commission notified its UERC (Tariff and Other Terms for Supply of Electricity from Non-conventional and Renewable Energy Sources)

Regulations, 2008 (hereinafter termed as "Regulations") which were effective from 01.04.2008, on 30.04.2008, whereby it repealed its Orders on Approach to Determination of Tariff for Small Hydro Power Projects with Capacity upto 1 MW (including the amendment Regulation dated 18.05.2007) and New SHPs above 1 MW and upto 25 MW dated 10.11.2005. The Commission has specified the normative tariffs for SHPs in the Regulations which were not to be applicable on generating stations commissioned before 1.1.2002 and their present tariffs were to be applicable till they are decided by the Commission on case to case basis.

- (15) The Petitioner filed this Petition on 14.07.2008, wherein it requested the Commission to allow it the tariff equal to that of the weighted average cost of power allocated to the State from central generating stations in the case of 8 SHPs of capacity above 1 MW and up to 5 MW listed in S. No. 15 to 22 in Table 1 given above in accordance with the Commission's Order dated 18.05.2007.
- (16) The Petitioner further submitted that due to the delay in aggregating the information for onward submission to the Commission, the tariffs of the small generating stations with capacities from 1 MW upto 25 MW Order could not be determined which was causing continuous financial loss to the Petitioner since the billing of energy sold from SHPs is suspended with effect from 01.10.2005 and UPCL continued to pay it at the much lower rate of 38.69 Paise Unit in accordance with the Commission's directives.
- (17) Subsequently, the Petitioner filed a Supplementary Petition on 17.02.2009 seeking final tariff for 11 Small Hydro Plants of UJVNL of capacity above 1 MW and upto 25 MW as per UERC (Tariff and Other Terms for Supply of Electricity from Non- conventional and Renewable Energy Sources) Regulations, 2008.
- (18) The Petitioner has furnished the date of commissioning of these 11 SHPs with capacity above 1 MW and upto 25 MW which is as given hereunder in Table 2:

**Table 2: Date of Commissioning of UJVNL SHP's**

S. No.	Name of the SHP	Date of Commissioning
1.	Chirkila	05/1997
2.	Relagad	17/04/2004
3.	Kanchuti	08/1993
4.	Kulagad	09/1995
5.	Badrinath	30/10/2004
6.	Pilangad	02/2004
7.	Urgam	04/1998
8.	Galogi	1907
9.	Jummagad	24/06/08
10.	Mohammadpur	1952
11.	Pathri	1955

- (19) The Petitioner has submitted that out of the above stations 7 stations namely, Chirkila, Kanchuti, Kulagad, Urgam, Galogi, Mohammadpur and Pathri have been commissioned prior to 01.01.2002. The Petitioner has requested the Commission to allow it the appropriate tariff for the SHPs commissioned prior to 01.01.2002 in accordance with the clause "2" of Para (3) under the heading "Scope and Extent of Application" of the Regulations on case to case basis.
- (20) The Petitioner has also submitted that the SHPs namely Relagad, Badrinath and Pilangad of capacity above 1 MW and upto 5 MW were commissioned after 01.01.2002 but prior to 01.04.2007, hence, they may be allowed tariff equal to the levellised rates of fixed charges (RFC) of Rs. 2.55 per kWh specified in the Schedule 1 of the Regulations dated 30.04.08 and for Jummagad SHP commissioned on 24.06.2008, the levellised rate of fixed charges (RFC) of Rs. 2.80 per kWh specified in the Schedule 1 of the Regulations may be allowed.
- (21) Further, Commission sought the comments of UPCL, the only stakeholder for the said petition, and in reply UPCL has submitted that the Tariff for the 7 SHP's commissioned prior to 1-1-2002 may be determined considering the component of Depreciated Cost of Projects, Operation & Maintenance Expenses and Interest on Loan Capital. UPCL has also requested that 3 SHP's namely Galogi, Mohammadpur & Pathri are very old projects and their

depreciation cost is negligible and hence, only operation & maintenance expenses are to be considered for determining the tariff.

## **2 Commission's Approach & Analysis**

- (22) As discussed above, the Commission has notified its UERC (Tariff and Other Terms for Supply of Electricity from Non-conventional and Renewable Energy Sources) Regulations, 2008. These Regulations came into force with effect from 01.04.2008 and these Regulations have repealed/superseded the Orders on Approach to Determination of Tariff for Small Hydro Power Projects with Capacity upto 1 MW (including the amendment Regulation dated 18.05.2007) and New SHPs above 1 MW and upto 25 MW dated 10.11.2005. Further, the Regulations also provide that tariffs specified in the Regulation shall not be applicable for generating stations commissioned before 1.1.2002 and their present tariffs shall continue to be applicable till they are decided by the Commission on case to case basis.
- (23) Thus, the tariff sought by the Petitioner on weighted average cost in its Petition filed on 14.07.2008 cannot be granted in accordance with the Commission's Order dated 18.05.2007 as the new Regulations have repealed/superseded the Commission's Orders dated 10.11.2005 and 18.05.2007, as has already been mentioned in the above paragraph.
- (24) Petitioner's submission in the Supplementary Petition filed on 17.02.2009, regarding the approval of tariffs for the new Stations, namely Relagad, Badrinath, Pilangad and Jummagad commissioned after 01.01.2002 in accordance with the new Regulations, has merit as the new regulations are applicable to them and the levelised Rate of Fixed Charges given under Schedule 1 of the Regulations are applicable for these 4 stations.
- (25) However, for remaining 7 stations the new Regulations cannot be applied for reasons discussed above. In the Supplementary Petition, the Petitioner has also not proposed any methodology based on which the tariffs for such station can be determined. Infact, it has left it on the Commission to allow it appropriate tariffs. Till date no tariff has been determined by this Commission for these stations as UJVNL had not submitted requisite information inspite of

Commission's repeated directions. The payments are being made for energy supplied by these stations @ 38.69 p/kWh since 01.10.2005 in accordance with the direction of the Commission in the Tariff Order dated 25.04.2005.

- (26) The Petitioner had the option to get its tariffs determined in accordance with the Orders on Approach to Determination of Tariff for Small Hydro Power Projects with Capacity upto 1 MW (including the amendment Regulation dated 18.05.2007) and New SHPs above 1 MW and upto 25 MW dated 10.11.2005 as it had done for its 13 small generating stations for which tariffs were based on avoided cost approach in accordance with the Commission's Order dated 10.11.2005. The option to get the tariffs determined on the basis of avoided cost approach was later extended by the Commission to be applicable to SHPs having capacity upto 5 MW. However, the Petitioner still did not approach the Commission to get its tariff determined for the remaining stations which reflects on the Petitioner's seriousness to get its tariff determined. The impact of this lackluster attitude of the Petitioner cannot be passed on to the consumers for past years. Hence, the Commission is refraining from approving the tariffs retrospectively and is approving the same from 01.04.2008, i.e. the period when the Regulations came into force and also the year in which this Petition had been filed by the Petitioner.
- (27) For determining the tariffs of these stations, the options available before the Commission are either to determine the tariffs of these stations in accordance with the UERC (Terms and Conditions of Determination of Tariff for Hydro Generating Stations) Regulations, 2004 on cost plus basis with suitable relaxations or in accordance with the norms laid down by the Commission in the new Regulations notified on 30.04.2008 on normative basis with suitable modification in normative capital cost considering their date of commissioning. However, determination of tariff in accordance with the cost plus basis is not a viable option as during the previous filings made by the Petitioner, it was observed that the Petitioner could not substantiate the capital cost of these stations neither was it able to validate the operational data of design energy, auxiliary consumption, financing of the projects in the absence of the DPR and other relevant documents, because of which the Commission could not determine the tariff and was forced to return the applications filed



by the Petitioner previously, asking it to file the same alongwith details and justifications of the operational data claimed in its applications. The absence of these essential data still persists which makes it difficult for the Commission to determine tariffs on cost plus basis. Thus, the only option feasible is to determine tariffs on normative basis using the norms specified by the Commission in the new Regulations. However, the norms specified in the new Regulations cannot be applied on these stations as the norms are for new stations commissioned after 01.01.2002 and these stations are older, hence slight modification has to be made in normative capital cost for these stations considering their date of commissioning. All other norms as laid down in the Regulations can then be applied directly, which are discussed hereunder:

## 2.1 Norms of Operation

- (28) The norms of operation as per Regulations have been considered as under, namely:
- a) Normative PLF for recovery of full fixed charges: 45%
  - b) Normative Auxiliary Consumption including Transformation Loss: 1%
- (29) The useful life is considered as 35 years and the levelised tariffs for these stations have been determined for 30 years in line with the Regulations.

## 2.2 Capital Cost

- (30) The normative capital cost (Rs. Cr./MW), including cost of transmission line and bays at receiver's end, have been taken in the new Regulations as Rs. 5.50 Crore/MW for stations commissioned after 01.01.2002 but before 01.04.2007 and Rs. 6.00 Crore / MW for stations commissioned on or after 01.04.2007. Since these stations are older, norms specified in the Regulations cannot be applied to these stations of UJVNL which are as old as 102 years in case of Galogi and 57 and 54 years in case of Mohammadpur and Pathri respectively. For 4 stations commissioned in or after 1993-94, the Commission has used the actual annual inflation rates till 2007-08 to work out the normative capital cost in the year of commissioning taking Rs. 6 Crore/MW as specified in the Regulations as normative capital cost for 2007-08 (**Annexure 1**). The actual

inflation rates have been worked out on the basis of principles laid down in UERC (Terms and Conditions for Determining Escalation Factor) Regulations, 2008 for generating stations for the period 1993-94 to 2007-08 (**Annexure 2**). For years prior to 1993-94, the Commission has used the compounded average inflation/growth rate (CAGR) of 8.01% for CPI and 8% for WPI to determine their normative capital cost for stations as old as 1907, 1952 and 1955. The CAGR for CPI and WPI have been taken on the basis of actual values of CPI and WPI for the years 1960-61 and 1993-94. It has also been found that ratio of CAGR for WPI\_SC and WPI averages to 0.75 during the period 1993-94 to 2007-08. Accordingly, a factor of 0.75 has been used to calculate CAGR of WPI\_SC from CAGR of WPI of 8% for period prior to 1993-94, which works out to 6%. The annual escalation factors have then been calculated using the formula given in the Regulations and are given in Annexure 1. The capital cost worked out accordingly by the Commission for these seven stations is as given hereunder:

**Table 3: Normative Capital cost worked out by the Commission**

Stations	Date of Commissioning	Year of Commissioning	Capacity (MW)	Capital Cost (Rs. Cr. /MW) on CoD
Galogi	1907	1907-08	3.00	0.01
Mohammadpur	1952	1952-53	9.30	0.16
Pathri	1955	1955-56	20.40	0.20
Kanchauti	August, 93	1993-94	2.00	2.78
Kulagad	September, 95	1995-96	1.20	3.35
Chirkila	May, 97	1997-98	1.50	3.75
Urgam	April, 98	1998-99	3.00	4.06

(31) No additional capitalisation has been considered after the CoD in absence of details. Further, since capital subsidy/grant has not been considered for depreciation purposes, it has been assumed that the Petitioner has carried out additional capitalisation work, if any, through depreciation available to it.

### 2.3 Debt-Equity Ratio

(32) In case of these stations, as per Regulations, normative debt-equity ratio as on the date of commercial operation has been assumed to be 70:30 for determination of tariff.

## **2.4 Annual Fixed Charges**

- (33) As per Regulations, Annual Fixed Charges shall consist of:
- a. Interest on loan capital;
  - b. Depreciation,
  - c. Return on equity;
  - d. Operation and maintenance expenses; and
  - e. Interest on working capital.

## **2.5 Interest on loan capital**

- (34) Since, all the 7 stations are older than 10 years, which is the normative loan repayment period, no outstanding loan and interest thereon has been considered.

## **2.6 Depreciation**

- (35) For the purpose of tariff, in terms of the Regulations, depreciation has been computed annually on the straight line method using the life of the project as 35 years, the residual value of the asset as 10% and depreciation has been allowed up to maximum of 90% of the capital cost worked out and given in the Table 3 above.

## **2.7 Return on Equity**

- (36) Return on equity has been computed on the equity base determined in accordance with Para 2.3 @ 14% per annum specified in the Regulations.

## **2.8 Operation and Maintenance expenses**

- (37) As specified in the Regulations, the base operation and maintenance expense has been fixed as %age of the normative capital cost, as given below, of Rs. 6 Crore/MW, in 2007-08 and has been subject to an annual escalation of 5% per annum for the subsequent years.

Upto 5 MW : 5.00%

5 to 10 MW : 4.75%

20 to 25 MW : 4.00%

## **2.9 Interest on Working Capital**

- (38) Working Capital has been calculated as per Regulations to include:
- a) Operation and Maintenance expenses for one month;
  - b) Maintenance spares @ 1% of the capital cost of Rs. 6 Crore/MW escalated @ 5% per annum from 2007-08.
- (39) The rate of interest on working capital has been taken as per Regulations to be the short-term Prime Lending Rate of State Bank of India as on 1.4.2007, which is 12.25%.

## **2.10 Tax on Income**

- (40) In terms of Regulations, tax on the income streams of the generating company from its core business shall be computed as an expense and shall be recovered from the beneficiaries and shall be in accordance with the provisions specified by the Commission in UERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2004 and other Regulations which the Commission may specify from time to time.

## **2.11 Levelised RFC**

- (41) The levelised Rate of Fixed Charges (RFC) has been worked out as per the Regulations as detailed below:
- (42) Rate of Fixed Charges (RFC) for each year has been worked out by dividing Annual Fixed Charges by Saleable Energy for that year.
- (43) The levelised RFC (Rs./kWh) has been worked out by levelising the Rate of Fixed Charge for each year during the life of the project.
- (44) The rate of discounting taken for levelising is 11.1%.

## **2.12 Tariff**

- (45) Thus, based on the above discussions, the Commission has worked out and approved the following levelised tariffs given in the Table 4 below for the 7 stations in the Petition filed by the Petitioner w.e.f. 01.04.2008. The tariffs applicable w.e.f. 01.04.2008 for the balance 4 stations commissioned after

01.01.2002 are those specified in Schedule 1 of the Regulation, for which determination is not required, and are also given in the Table 4 given below.

**Table 4: Tariff approved by the Commission for UJVNL's SHPs**

S. No.	Name of the SHP	Capacity (MW)	Year of Commissioning	Levelised tariff (Rs./kWh)
1.	Chirkila	1.50	1997-98	1.90
2.	Relagad	3.00	2004-05	2.55
3.	Kanchuti	2.00	1993-94	1.70
4.	Kulagad	1.20	1995-96	1.80
5.	Badrinath	1.25	2004-05	2.55
6.	Pilangad	2.25	2003-04	2.55
7.	Urgam	3.00	1998-99	1.95
8.	Galogi	3.00	1907-08	1.25
9.	Jummagad	1.20	2008-09	2.80
10.	Mohammadpur	9.30	1952-53	1.20
11.	Pathri	20.40	1955-56	1.05

(46) These tariffs have been made effective from 01.04.2008 as the Regulations came into force with effect from 01.04.2008 and shall be valid for a period of 30 years from this date.

### **2.13 Incentive for generation beyond normative PLF**

(47) As per Regulations, the tariff for generation beyond normative PLF shall be allowed to be recovered at the normal tariff determined by the Commission in this Order.

### **2.14 Other terms and conditions**

(48) Apart from the tariffs, other terms and conditions as specified in the Regulations shall apply to all the SHPs under the control of UJVNL including the duties and obligations of the generating plants specified in the Regulations.

(49) The Petition is disposed off accordingly.

**(Anand Kumar)**  
Member

**(V. J. Talwar)**  
Chairman