



# National Electric Power Regulatory Authority

Islamic Republic of Pakistan

2nd Floor, OPF Building, G-5/2, Islamabad

Ph: 9206500, 9207200, Fax : 9210215

E-mail: registrar@nepra.org.pk

Registrar

No. NEPRA/TRF-150/SHYDO-2010/4295-4297

December 06, 2010

**Subject: Determination in the matter of 18 MW Pehur Hydropower Project of Sarhad Hydel Development Organization (SHYDO) (Case No. NEPRA/TRF-150/SHYDO-2010)**

Intimation of Determination of Tariff pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997)

Dear Sir,

Please find enclosed the subject Determination of the Authority along with Annexure-1 & II (18 pages) in Case No. NEPRA/TRF-150/SHYDO-2010.

2. The Determination is being intimated to the Federal Government for the purpose of notification in the official gazette pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997) and Rule 16(11) of the National Electric Power Regulatory Authority Tariff (Standards and Procedure) Rules, 1998.

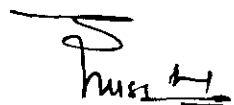
3. Please note that based on Determination of the Authority only Order of the Authority at para 22 of the Determination relating to the reference tariff, adjustments, indexation & terms and conditions etc along with Annexure-I & II needs to be notified in the official gazette.

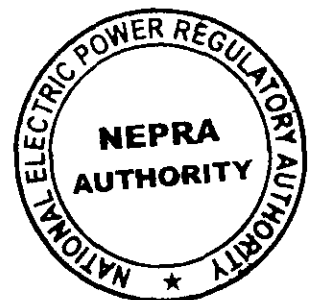
Enclosure: As above

Secretary  
Ministry of Water & Power  
'A' Block, Pak Secretariat  
Islamabad

CC:

1. Secretary, Cabinet Division, Cabinet Secretariat, Islamabad.
2. Secretary, Ministry of Finance, Islamabad.

  
( Syed Safer Hussain )





**DETERMINATION IN THE MATTER OF 18 MW PEHUR HYDROPOWER PROJECT  
OF SARHAD HYDEL DEVELOPMENT ORGANIZATION (SHYDO)  
CASE NO. NEPRA /TRF-150/SHYDO-2010**

1

1. Sarhad Hydel Development Organization (hereinafter referred as “SHYDO” or the “Petitioner”) filed a Tariff Petition under Rule 3 of the National Electric Power Regulatory Authority (Tariff Standards and Procedure) Rules, 1998 (hereinafter referred to as the “Tariff Rules”) on January 11, 2010 for determination of final generation tariff at Commercial Operations Date (hereinafter referred “COD”) in respect of its 18 MW Pehur Hydropower project located downstream of the Gandaf Pressure Tunnel forming an integral part of Pehur High Level Canal (PHLC), which off-takes from Tarbela reservoir in the District Swabi, Khyber Pakhtunkhwa. According to the Petitioner, the Project feasibility study was conducted by ACE (Pvt.) Limited, in association with Halcrow Group and Development Management Consultants and was completed in May 2001. The Study covered and addressed the following aspects of the Project:

- Planning and supervision of surface and subsurface field and laboratory investigations.
- Geological, seismological and geo-technical aspects.
- Hydraulic and hydrologic analysis.
- Selection of a preferred layout of the scheme
- Computation of the expected energy generation scenarios
- Analysis of energy value and unit cost
- Environmental Impact Assessment
- Development of a cost effective design, consistent with the physical and environmental constraints
- Cost estimates for the equipment and construction
- Economic and financial viability of the proposed scheme.

2. The Petitioner submitted that the project started in February 2004 and achieved its COD on March 01, 2010. According to the Petitioner, the Project has been connected to the 132 KV Gadoon Grid Station being operated and maintained by Peshawar Electric Supply Company Ltd. (PESCO), through a 1.2 KM long, single circuit 132KV transmission line. The technical and financial information provided by the Petitioner are as under:

Description	Data
Type of Turbines	Frances Turbines
No. of Units	2



Handwritten signatures and initials, including a checkmark and the number 1.



Estimated Gross Plant Capacity	18 MW
Auxiliary Consumption	0.1 MW
Net Plant Capacity	17.9 MW
Annual Net Generation	57.7 GWh
Average Annual Plant Factor	41%
Financing Structure	
• Loan	70%
• Equity	30%
Total Project Cost	US\$ 22.700 Million
Specific Cost per KW for 18 MW (Gross) Capacity Plant	US\$ 1.261 Million/MW

3. The Petitioner sought following relief:

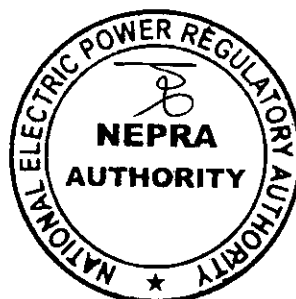
Reference Tariff	Rs./kWh
• Average for Year 1 to 10	7.743
• Average for Year 11 to 25	3.731
• Levelized for Year 1 to 25	6.447

4. The Tariff Petition was admitted by the Authority on January 18, 2010 in terms of Rule 4 of the Tariff Rules. In compliance with the provisions of sub-rule 5 & 6 of Rule 4 of the Tariff Rules, notices for admission were sent to the parties which were considered to be affected or interested. The advertisement by publication of the title and brief description of the petition was also affected in the leading national newspapers on January 31, 2010 inviting filing of comments and intervention requests by any interested person.

5. In response to the notice of admission and advertisement thereof, no body opted to file intervention request. However, comments from Pakistan Electric Power Company Ltd. (PEPCO) and Central Power Purchase Agency (CPPA) were received, which were forwarded to the Petitioner for its response.

6. Based on comments of stakeholders and proceeding of the case, the following main issues have been framed for the consideration of the Authority:

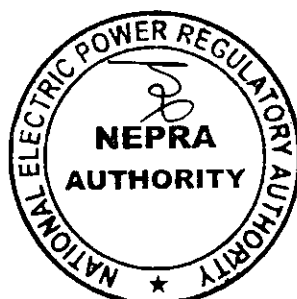
- i) Net Annual Energy Production
- ii) Project Cost
- iii) Engineering, Procurement and Construction (EPC) Cost
- iv) Non EPC Cost
- v) Financial advisory fees & charges of debt arrangement



Handwritten marks: a checkmark, a signature, and the number 2.



- vi) Interest During Construction  
vii) Debt Servicing  
viii) O&M Expenses  
ix) Hydrological Risk and Hydrology  
x) Insurance  
xi) Return on Equity  
xii) Return on equity during construction
7. The pleadings available on record were examined by the Authority in terms of Rule 9(1) of the Tariff Rules for the purpose of arriving at a decision on whether a hearing is required or not. The Authority decided it appropriate to conduct a hearing to arrive at a just and informed decision. The Authority therefore decided to hold the hearing on February 23, 2010 which was later on changed to March 02, 2010 and notice as required under Rule 9(4) of the Tariff Rules was published on February 13, 2010 inviting participation of the stakeholders. Individual letters were also sent to the stakeholders. The hearing was conducted by the Authority as scheduled and stakeholders including representatives of PESCO and Techno Art Consulting Engineers participated in the hearing.
8. On the basis of pleadings, evidence/record produced and arguments of the parties, issue-wise findings of the Authority are given as under:
9. Net annual Energy Production
- 9.1 The Petitioner has estimated net annual production of 57.7 GWh at 41% plant factor. According to the Petitioner the head on the turbines is governed by the operation of Tarbela Reservoir, which varies throughout the year. The variation of the net head has two distinct phases that is low head period from February to June with an average of 40 m and high head period from July to January with an average of 68 m. The minimum and maximum net head varies between 26.3m in the month of March and 84.4 m in October.
- 9.2 On the basis of Hydrological studies provided by the Petitioner, the Authority considers the net annual energy production of 57.7 GWh, as proposed by the Petitioner, seems reasonable and is therefore accepted. The plant capacity factor based on this net energy production works out to be 36.8% as against 41% claimed by the petitioner and is accordingly allowed by the Authority.



G H 2



10. Project Cost

10.1 The Petitioner claimed US\$ 22.700 million as total cost of the project, which was claimed to be based on actual expenses incurred up to COD along with other expenses estimated by the Petitioner. The Petitioner provided the following breakup of various components:

Description	Amount (Rs. Million)
Design	56.294
Civil works	370.990
Mechanical & electrical equipment	351.364
Transmission line	4.421
Completion tests	4.142
Other preliminary costs	8.608
Contractor escalation & claims	500.000
<b>Engineering, Procurement Construction Works</b>	<b>1,295,819</b>
Feasibility, project management, supervision, engineering, studies	44.760
Land acquisition, access bridge, road and other preliminary works	93.194
Security charges	23.000
Project establishment cost	13.649
SHYDO overheads	15.050
<b>Non-EPC</b>	<b>189.653</b>
Financial advisory/arrangement fees	34.541
Interest During Construction (IDC)	162.778
<b>Total Project Cost (inclusive of IDC)</b>	<b>1,682.791</b>
<b>Total Project Cost (inclusive of IDC) (US\$)</b> <b>(@ Rs. 74.13/US\$)</b>	<b>22.700</b>
<b>Cost per MW (US\$ Mln @ Rs. 74.13/US\$)</b>	<b>1.2611</b>
<b>Cost per MW (US\$ Mln @ Rs. 84.90/US\$)</b>	<b>1.1011</b>

10.2 In order to know the reasonability of the cost per MW, the cost requested by the Petitioner on this account was compared with other hydropower projects recently approved by the Authority i.e. Malakand-III, S.K Hydro, Blue Star, etc. The comparison indicated that the cost per MW requested by the Petitioner is comparable with other hydel power projects.



Handwritten initials/signatures



11. EPC Cost

11.1 The Petitioner initially requested Rs.1,295.819 million (including EPC cost escalation). However, subsequently EPC cost was revised by excluding Rs. 500 million as disputed amount on account of EPC cost escalation, but including Rs. 9.694 million on account of additional transmission line, Rs. 3.719 million on account of line differential relay and Rs. 0.162 million on account of completion test. The Petitioner submitted that Rs. 500 million requested by the EPC contractor was although disputed, however for the purpose of calculation of tariff it was included in the project cost.

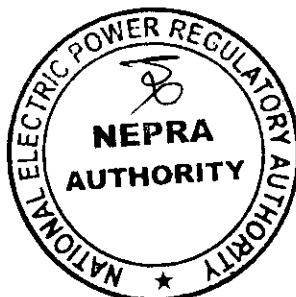
11.2 CPPA submitted that justification of Rs. 500 million included under project cost, on account of contractor's escalation and claims arising from delays due to security situation, included by the Petitioner needs to be reviewed by the regulator. CPPA further submitted that this amount has already been disputed by the Petitioner and in no way it could be treated as a part of the project cost.

11.3 Based upon the information submitted by the Petitioner, comments of CPPA and the Petitioner's statement itself during the hearing held on 2<sup>nd</sup> March 2010 it is clear that the Petitioner is not able to substantiate its claim regarding Rs. 500 million and this amount has been disputed by the Petitioner with the EPC Contractor, therefore this cost cannot be allowed at this point of time. However, the Authority may re-consider this issue in case the Petitioner is able to justify its claim with verifiable documentary evidence.

11.4 Based upon the available verifiable information, including EPC Contract, EPC invoices supported with bank statements and other related documentary evidences submitted by the Petitioner, comments of CPPA/PEPCO, the Authority has verified Rs. 807.075 million as EPC cost, which includes cost of EPC Contract amount Rs. 793.5 million, additional transmission line Rs. 9.694 million, line differential relay Rs. 3.719 million and completion test fee Rs. 0.162 million which the Authority considers is reasonable therefore it has been decided to allow the same.

12. Non-EPC Cost

12.1 The Petitioner requested the Authority to allow Rs. 189.653 million on account of Non-EPC cost. The Petitioner submitted that this amount covers cost of Feasibility, project management, supervision, engineering studies, land acquisition, access bridge, road and other preliminary works, security charges, project establishment cost and SHYDO overheads.



G

A

2



12.2 Based upon the following adjustments, the Non-EPC cost of the Petitioner has been assessed as Rs. 49.534 million and the same has been allowed to the Petitioner:

12.3 Feasibility, project management, supervision, engineering studies

12.3.1 The Petitioner has claimed Rs. 44.760 million on account of Feasibility, project management, supervision and Engineering Studies. In order to substantiate this amount the Petitioner has submitted:

- i) the breakup of Rs. 28.697 million reconciled with the invoices for Project Management, Supervision etc. paid to ACE Engineering,
- ii) approved documentation of Rs. 7.615 million paid for the feasibility report; and
- iii) Agreement of advisory services cost of Rs. 3.9 million with Financial Consultant.

12.3.2 Based upon the information submitted by the Petitioner the total amount of Rs. 40.212 million has been substantiated with documentary evidence whereas the Petitioner was unable to justify the remaining amount of Rs. 4.548 million. Therefore after adjustment, verifiable amount of Rs. 40.212 under this cost component has been allowed by the Authority to the Petitioner.

12.4 Land acquisition, access bridge, road and other preliminary works

12.4.1 The Petitioner has claimed Rs. 93.194 million on this account. According to the Petitioner, this expense has not been incurred yet and it has been claimed on estimated basis. The Petitioner requested an estimated amount of Rs. 47.920 million on account of land acquisition and Rs. 45.274 million on account of Access Bridge and road & other preliminary works. The Petitioner in support of its claim has submitted the quotations of recent available registries in that area (Rs. 239,320 /Kanal) along with the estimated area to be acquired (200 Kanals).

12.4.2 Since the Petitioner's request for allowing Rs. 93.194 million is on estimated basis and no actual cost has been incurred so far therefore the Authority has decided not to allow this cost at this point of time. The Petitioner may resubmit its request after the actual costs have been incurred along with verifiable authentic documentary evidence for consideration of the Authority.



3

4

2

6



12.5 Security charges

12.5.1 The Petitioner requested the Authority to allow Rs. 23.000 million on account of Security charges. However the Petitioner later on submitted that security charges are not applicable because these have been billed by the Frontier Constabulary (FC) to Malakand-III Power Project and this amount has already been allowed by NEPRA in the case of Malakand-III Power Project.

12.5.2 The Authority considers that since this cost does not pertain to Pehur therefore it cannot be allowed to the Petitioner.

12.6 Project establishment cost

12.6.1 The Petitioner requested the Authority to allow Rs. 13.649 million under the head Project establishment cost. However later on it revised its request downward to Rs. 9.322 million. The Petitioner in support of its claim provided the breakup of Project establishment costs and bank statement evidencing that payments were made.

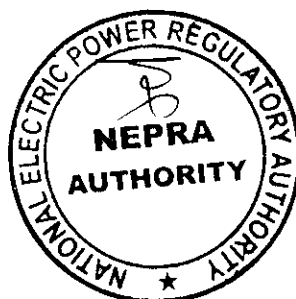
12.6.2 The Authority considers, based on the information provided by the Petitioner, the cost requested on this account seems reasonable therefore the same has been allowed.

12.7 SHYDO overheads

12.7.1 The Petitioner requested the Authority to allow Rs. 15.050 million for SHYDO overhead. In support of its claim the Petitioner submitted minutes of the meeting of SHYDO in which it has levied 1% service charges on expenditures to be incurred on all development schemes of the organization.

12.7.2 CPPA in its comments stated that SHYDO overhead of Rs. 15.050 million may not qualify as project cost. According to CPPA, SHYDO is a hydel development institution of Khyber Pakhtunkhwa and all its budgetary requirements are required to be met through the provincial government financing.

12.7.3 The Authority considers that 1% services charge levied by SHYDO on the funds provided by it to the Pehur Power Project is not justified because return at the rate of 17% on Equity injected in the project has already been allowed to it. The Authority therefore considers that 1% service charge in addition to ROE cannot be allowed.



Handwritten initials and a checkmark.

2

7



13. Financial Advisory Fees & Charges of Debt Arrangement

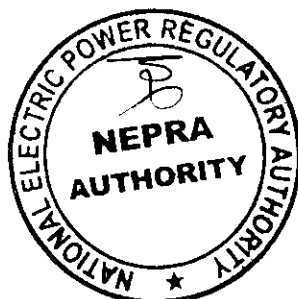
13.1 The Petitioner requested for approval of Rs. 34.541 million on account of financial advisory fees & charges for debt arrangement. The Petitioner submitted that although no payment on this account has been made but the same may be allowed as this has already been allowed by the Authority to other IPPs. While justifying its request the Petitioner stated that it intends to raise funds from market in order to pay off the provincial Government's loan.

13.2 The Authority considers that claim of financial advisory fees and charges of debt arrangement are not justified because the project has already been commissioned and no expense has been incurred on this account to-date. Furthermore, the Petitioner has already arranged its loan from Government of Khyber Pakhtunkhwa therefore there are lesser chances that the Petitioner would make a new financing arrangement with banks. Based on the term sheet provided by the Petitioner it has already been allowed interest with maximum ceiling of KIBOR+3%. The Authority considers that since the Commercial Operations of Pehur have already commenced therefore risk factor associated with it are low as against comparable Malakand-III power project where finance was raised at KIBOR plus 1.4%. In case the Petitioner, in future, intends to avail the opportunity of utilizing loans from commercial banks, then considering its current status, financing advisory fees and charges can be met by savings in the debt servicing due to reduction in the interest rates. In view therefore the Authority finds no justification for allowing the requested amount on this account.

14. Interest During Construction (IDC)

14.1 The Petitioner in its petition requested the Authority to allow an amount of Rs. 162.778 million on account of Interest during Construction based on estimated COD of August 2009. However in support of its claim no documentary evidence or backup calculations were provided. Through information direction dated May 25, 2010, the Petitioner was directed to submit the relevant information. The Petitioner subsequently revised this amount to Rs. 178.391 million based on the actual COD i.e. March 01, 2010.

14.2 The Petitioner's calculations of IDC amount of Rs. 178.391 million were based on total construction period from January 2006 to February 2010. In the absence of any tariff determination (the Petitioner has submitted its tariff petition after achieving COD) and Power Purchase Agreement (PPA), Authority has considered the total construction period claimed by the Petitioner to be reasonable for a project of this type and size.



G

A

2

8



14.3 Based on total construction period of about four years, after deducting interest income of Rs. 3.01 million earned during the construction period, IDC works out to Rs. 175.292 million and this amount is accordingly allowed.

15. Debt Servicing

15.1 The Petitioner requested the Authority to consider the funded amount of the project Rs. 1,682.791 million as 70% debt and 30% equity. The Petitioner submitted that the debt may kindly be quarterly adjusted with the prevailing KIBOR. The Petitioner submitted that initial loan arrangement of Rs. 641 million has been made with Government of Khyber Pakhtunkhwa (Rs. 471 Million) and Hydel Development Fund (Rs. 170 million). In order to substantiate the total loan arrangements and applicable interest rate the Petitioner provided the loan term sheets. The Petitioner in support of its claim also provided the bank statements indicating the injection of actual funds with respective dates.

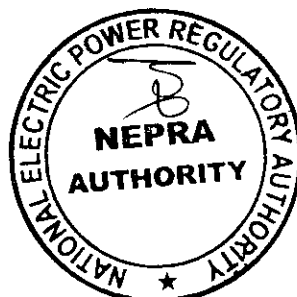
15.2 The Petitioner was able to negotiate a very competitive interest rate @ KIBOR +1.4% p.a for its earlier project. The Authority however considers that keeping in view the current liquidity position of banks, banker's over exposure in the power sector and interest rate allowed to other IPPs there are grounds for revising the maximum limit of interest rate allowed. The Authority has therefore decided to allow maximum ceiling of interest @KIBOR+3% as per the term sheets provided by the Petitioner.

15.3 Based on debt of Rs. 722.331 million (70% of total project cost Rs. 1,031.901 million) as determined by the Authority the debt servicing component of tariff for 10 years, re-payable in 40 equal quarters and carrying interest of KIBOR + 3% works out to Rs. 2.4699 /kWh.

16. O&M Expenses

16.1 Fixed O&M

16.1.1 The Petitioner requested the Authority to approve Rs. 1.438/kWh on account of fixed O&M cost. The Petitioner in support of its claim submitted O&M contract with AL-FAJR International (Lead Partner) and ZHEJIANG Equipment & Machinery I/E Co. Ltd. China (Associate) dated May 2009, initially made for the term of 5 years. The Petitioner claimed US\$ 1.0 million p.a. (Rs. 83 million p.a) as fixed O&M expense. The Petitioner further requested that fixed O&M may be treated as 50% foreign and 50% as Local. The Petitioner requested for adjustment of US CPI and exchange rate indexation on foreign component and WPI indexation on local component. The



Handwritten signatures and initials, including a large 'A' and 'G', and the number '9'.



Petitioner also provided the Contractor's Bid for Cost of service payable in Pak Rupees. CPPA submitted that one million US\$ for a project of 18 MW is on higher side and need to be reviewed.

16.1.2 In order to assess the reasonability of the cost requested by the Petitioner, analysis of Fixed O&M cost allowed by the Authority for comparable projects was carried out. Based on the comparative analysis, information provided by the Petitioner, comments of the Power Purchaser and available documentary evidences, the Authority has decided to allow the verifiable authentic amount of Rs. 39.1418 million per annum as Fixed O&M cost. Since the O&M contract is in Pak Rupees therefore the Authority find no reason to allow indexation of US CPI and US\$ exchange rate. However local WPI indexation is allowed. Based on the aforesaid the fixed O&M in the instant case works out as Rs. 0.6783 per kWh and the same is allowed.

## 16.2 Variable O&M

16.2.1 The Petitioner has requested for approval of Rs. 0.1350/kWh on account of variable O&M.

16.2.2 In order to assess the reasonability of the cost requested by the Petitioner the comparative analysis of Variable O&M cost allowed by the Authority for comparable projects was carried out. The comparison indicates that the cost of Rs. 0.1350/kWh (Rs. 0.0675/kWh foreign and Rs. 0.0675/kWh local) requested by the Petitioner is reasonable. Therefore the same has been allowed.

## 17. Hydrological Risk and Hydrology

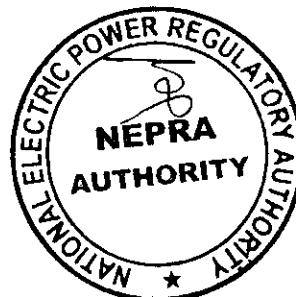
17.1 The Petitioner in its petition assumed that the Hydrological Risk will be borne by the Power Purchaser although Power Purchase Agreement (PPA) has not yet been signed.

17.2 The issue of hydrological risk and hydrology should be agreed between the power producer and power purchaser with mutual consent and needs to be settled in PPA.

## 18. Insurance

18.1 The Petitioner requested the Authority to allow insurance cost of Rs. 0.225/kWh. However, no insurance policy has been provided by the Petitioner.

18.2 In the absence of any documentary evidence, the Authority has decided not to allow insurance cost at this point of time. However, the Authority considered that the



Handwritten signatures and initials, including a checkmark, and the number 10.



insurance component will be considered as and when SHYDO finalizes its Insurance arrangements and submits the documents to the Authority for consideration and decision thereon up to a maximum limit of 1.35% of the EPC cost.

19. Return on Equity

19.1 The Petitioner requested the Authority to allow Rs. 1.575/kWh based on 18% IRR.

19.2 The Authority in other hydel power projects has allowed 17% IRR. Based on the same IRR and actual injection of funds duly verified with the bank statements, the ROE works out as Rs. 1.0445/kWh. The same is allowed.

20. Return on Equity during Construction

20.1 In the Original tariff petition, Petitioner based on 18% IRR and construction period from January 2006 to August 2009 has requested the Authority to allow Rs. 0.208/kWh.

20.2 However, on the basis of actual draw downs duly verified with the bank statements as provided and on the basis of 17% IRR, the ROEDC from January 2006 to March 2010 has been assessed as Rs. 0.2418/kWh.




21. Other Issues

21.1 Although the Petitioner has achieved COD but still various construction works such as access road, bridge, etc. have not been constructed. Similarly Insurance arrangements, etc. are still pending. The claims of EPC contractor due to delay in the project by more than three years due to law and order situation and further negotiations with O&M contractor is still in process.

21.2 The Authority considers that since no cost has been incurred on these accounts so far therefore these cannot be considered at this point of time. However, whenever the related costs are incurred, the Petitioner may file request with verifiable documentary evidence for adjustment of these costs.

22. Based on the above order of the Authority in the instant case is given hereunder: 





Order

Pursuant to Rule 16(11) of Tariff Standards and Procedure Rules – 1998, Sarhad Hydel Development Organization (hereinafter “SHYDO”) is allowed to charge for its Pehur Hydropower Project, the following specified/approved tariff for delivery of electricity to the Peshawar Electric Supply Company Ltd. (hereinafter “PESCO”):

**TARIFF TABLE**

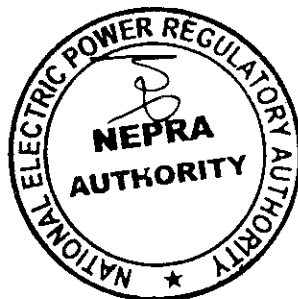
Tariff Components	Year 1-10 (Rs./kWh)	Year 11-25 (Rs./kWh)	Indexation
<b>Fixed Charge</b>			
Fixed O&M Local	0.6783	0.6783	WPI
Debt Service	2.4699	-	KIBOR
Return on Equity	1.0445	1.0445	US\$/PKR
ROEDC	0.2418	0.2418	US\$/PKR
<b>Variable Charge</b>			
Variable O&M – Foreign	0.0675	0.0675	US\$/PKR & US CPI
– Local	0.0675	0.0675	WPI
Water Use Charge	0.1500	0.1500	WPI

Note:

- i) The reference tariff has been calculated on the basis of benchmark net annual energy production of 57.7 GWh.
  - ii) Payment on account of hydrological risk shall be made by the Power Purchaser on the basis of benchmark monthly energy production based on the average historic hydrology for that particular month.
  - iii) In the above tariff no adjustment for CERs has been accounted for. However, upon actual realization of CERs, the same shall be dealt with in accordance with the approved mechanism as given in the Federal Government’s Policy for Renewables.
  - iv) The above tariff is applicable for a period of twenty five (25) years commencing from the date of COD.
  - v) The component wise tariff is indicated at Annex-1. Debt Service Schedule is attached as Annex-II.
2. The following indexations shall be applicable to reference tariff:

I. Pass-Through Items

No provision for income tax has been accounted for in the tariff. If SHYDO is obligated to pay any tax on its income, the exact amount paid by the company shall be reimbursed by PESCO to SHYDO on production of original receipts. This payment



*[Handwritten Signature]*

*[Handwritten Signature]*

*[Handwritten Mark]*



will be considered as a pass-through (as Rs./kWh) hourly payment spread over a 12 months period in addition to the capacity purchase price proposed in the reference tariff. Furthermore, in such a scenario, SHYDO shall also submit to PESCO details of any tax shield savings and PESCO shall deduct the amount of these savings from its payment to SHYDO on account of taxation.

Withholding tax is also a pass-through item just like other taxes as indicated in the government guidelines for the determination of tariff for new IPPs. In revised tariff table withholding tax number is indicated as reference and PESCO shall make payment on account of withholding tax at the time of actual payment of dividend subject to maximum of 7.5% of 17% of reference equity i.e. hourly payment (Rs./kWh) spread over 12 months.

In case company does not declare a dividend in a particular year or only declares a partial dividend, then the difference in the withholding tax amount (between what is paid in that year and the total entitlement as per the net return on equity) would be carried forward and accumulated so that the company is able to recover the same in hourly payments spread over 12 months period as a pass-through from the power purchaser in future on the basis of the total dividend payout.

## II. Hydrological Risk

The Petitioner in its petition assumed that the Hydrological Risk will be borne by the Power Purchaser although Power Purchase Agreement (PPA) has not yet been signed.

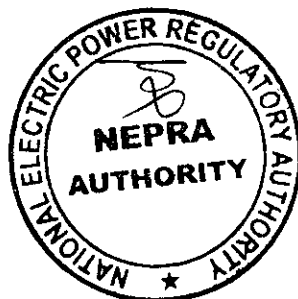
The issue of hydrological risk and hydrology should be agreed between the power producer and power purchaser with mutual consent and needs to be settled in PPA.

## III. Indexations

The following indexation shall be applicable to the reference tariff:

### (a) Indexation applicable to O&M

The local part of O&M cost will be adjusted on account of Inflation (WPI) and O&M foreign component will be adjusted on account of variation in dollar/Rupee exchange rate and US CPI. Quarterly Adjustment for local inflation, foreign inflation and exchange rate variation will be made on 1st July, 1st October, 1st January & 1st April respectively on the basis of the latest available information with respect to WPI (notified by the Federal Bureau of Statistics), US CPI (notified by US Bureau of Labor Statistics) and revised TT & OD Selling rate of US Dollar as notified by the National Bank of Pakistan. The mode of indexation will be as under:



✓  
M G 13



(i) Fixed O&M

$$F O\&M(LREV) = 0.6783 * WPI_{(REV)} / 159.31$$

Where:

F O&M(LREV) = the revised applicable Fixed O&M Local Component of the Fixed Charges indexed with WPI

WPI(REV) = the Revised wholesale Price Index (Manufactures)

WPI(REF) = 159.31 wholesale price index (Manufactures) of February 2010 notified by the Federal Bureau of Statistics

(ii) Variable O&M

The formula for indexation of Variable O & M component will be as under:

$$V O\&M(FREV) = 0.0675 * US CPI_{(REV)} / 216.741 * ER_{(REV)} / 84.90$$

$$V O\&M(LREV) = 0.0675 * WPI_{(REV)} / 159.31$$

Where:

VO&M(FREV) = The revised applicable Variable O&M Foreign component indexed with US CPI and currency fluctuation.

VO&M(LREV) = The revised applicable Variable O&M Local component indexed with WPI

US CPI(REF) = 216.741 US CPI for the month of February 2010

ER (REV) = The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

WPI(REV) = the Revised wholesale Price Index (Manufactures)

WPI(REF) = 159.31 wholesale price index (Manufactures) of February 2010 notified by the Federal Bureau of Statistics

(b) Water Use Charge

Water Use Charge will be paid on units delivered basis and will be indexed with Wholesale Price Index (WPI) annually.



*[Handwritten signature]*

*[Handwritten signature]*

*[Handwritten mark]*



$$WUC_{(REV)} = 0.1500 * WPI_{(REV)}/159.31$$

Where:

$WUC_{(REV)}$  = The revised Water Use Charge component indexed with Whole Sale Price Index (WPI)

$WPI_{(REV)}$  = The Revised wholesale Price Index (Manufactures)

$WPI_{(REF)}$  = 159.31 wholesale price index (Manufactures) of February 2010 notified by the Federal Bureau of Statistics

(c) **Adjustment for KIBOR variation**

The interest part of fixed charge component will remain unchanged throughout the term except for the quarterly adjustment due to variations in interest rate as a result of variation in 3-months KIBOR according to the following formula:

$$\Delta I = P_{(REV)} * (KIBOR_{(REV)} - 12.36\%) / 4$$

Where:

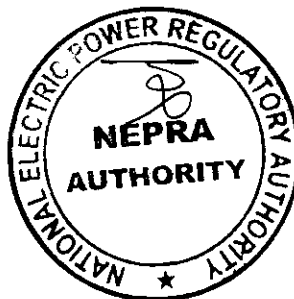
$\Delta I$  = the variation in interest charges applicable corresponding to variation in three month KIBOR.  $\Delta I$  can be positive or negative depending upon whether  $KIBOR_{(REV)} >$  or  $<$  12.36%. The interest payment obligation will be enhanced or reduced to the extent of  $\Delta I$  for each quarter under adjustment applicable on quarterly basis.

$P_{(REV)}$  = is the outstanding principal (as indicated in the attached debt service schedule to this order at Annex-II) on a quarterly basis on the relevant quarterly calculations date. Period 1 shall commence on the date on which the 1st installment is due after availing the grace period.

IV. **Terms and Conditions**

Power Curve of the Hydel Power Complex:

The power curve of the Hydel Power plant shall be verified by the Power Purchaser, as part of the Commissioning tests according to the latest IEC standards and shall be used to measure the performance of the hydel generating units.



*[Handwritten signature]*

*[Handwritten signature]*

✓



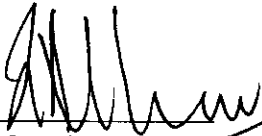



Emissions Trading/Carbon Credits:

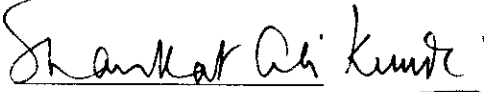
SHYDO would process and obtain emissions/carbon credits expeditiously and credit the proceeds to the Power Purchaser as per the policy issued by the Federal Government and agreed terms between the generator and the power purchaser.

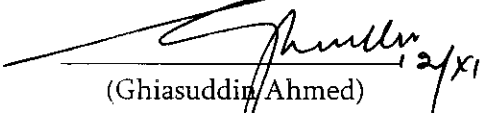
The above tariff and terms and conditions will be incorporated as the specified tariff approved by the Authority pursuant to Rule 16(11) of Tariff Standards and Procedure Rules - 1998, in the Power Purchase Agreement between SHYDO and CPPA/PESCO. The tariff and terms and conditions along with reference tariff table and debt service schedule as attached thereto (Annex I & II) are recommended for notification by the Federal Government in the official gazette in accordance with the Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (XL of 1997).

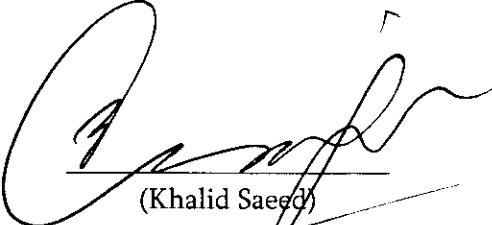
AUTHORITY

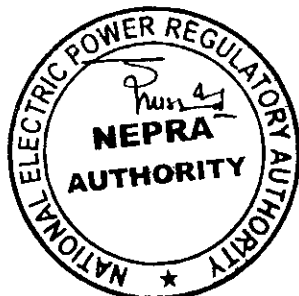
  
\_\_\_\_\_  
(Zafar Ali Khan) 22/11/10  
Member

  
\_\_\_\_\_  
(Maqbool Ahmad Khawaja)  
Member

  
\_\_\_\_\_  
(Shaukat Ali Kundi) 02.10.2010  
Member

  
\_\_\_\_\_  
(Ghiasuddin Ahmed)  
Vice Chairman /Member

  
\_\_\_\_\_  
(Khalid Saeed)  
Chairman





**18 MW Pehur Hydropower Project  
TARIFF TABLE**

Year	Variable O&M Local	Variable O&M Foreign	Water Use Charge	Fixed O&M Local	Return on Equity	ROE During Construction	Withholding Tax @7.5%	Loan Repayment	Interest Charge	Total
	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh
1	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	0.5795	1.8904	4.8159
2	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	0.6737	1.7962	4.8159
3	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	0.7833	1.6866	4.8159
4	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	0.9107	1.5591	4.8159
5	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	1.0589	1.4110	4.8159
6	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	1.2312	1.2387	4.8159
7	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	1.4314	1.0384	4.8159
8	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	1.6643	0.8056	4.8159
9	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	1.9350	0.5348	4.8159
10	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	2.2498	0.2201	4.8159
11	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
12	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
13	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
14	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
15	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
16	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
17	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
18	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
19	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
20	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
21	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
22	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
23	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
24	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
25	0.0675	0.0675	0.1500	0.6783	1.0445	0.2418	0.0965	-	-	2.3461
<b>Levelized Tariff</b>	<b>0.0675</b>	<b>0.0675</b>	<b>0.1500</b>	<b>0.6783</b>	<b>1.0445</b>	<b>0.2418</b>	<b>0.0965</b>	<b>0.7542</b>	<b>0.9178</b>	<b>4.0180</b>

*The above rate is limited to an annual energy production upto 57.704 GWh. Any generated energy beyond 57.704 GWh an year will be charged at 10% of the tariff for that year.*

Net Capacity at COD  
Exchange Rate at COD  
US CPI  
WPI (Manufacturers)



17.9 MW  
84.9 PKR/US\$  
216.741  
159.31

### SHYDO Pehur Project Debt Servicing Schedule

Period	Local Debt					Annual Principal Repayment Rs./kWh.	Annual Interest Rs./kWh	Annual Debt Servicing Rs./kWh
	Principal Million Rs.	Repayment Million Rs.	Mark-Up Million Rs.	Balance Million Rs.	Debt Service Million Rs.			
1	722.33	7.89	27.74	714.44	35.6303	0.5795	1.8904	2.4699
	714.44	8.20	27.43	706.24	35.6303			
	706.24	8.51	27.12	697.73	35.6303			
	697.73	8.84	26.79	688.89	35.6303			
	722.33	33.44	109.08	688.89	142.5213			
	688.89	9.18	26.45	679.72	35.6303			
	679.72	9.53	26.10	670.19	35.6303			
2	670.19	9.90	25.74	660.29	35.6303	0.6737	1.7962	2.4699
	660.29	10.28	25.36	650.02	35.6303			
	688.89	38.88	103.65	650.02	142.5213			
	650.02	10.67	24.96	639.35	35.6303			
	639.35	11.08	24.55	628.27	35.6303			
3	628.27	11.50	24.13	616.76	35.6303	0.7833	1.6866	2.4699
	616.76	11.95	23.68	604.82	35.6303			
	650.02	45.20	97.32	604.82	142.5213			
	604.82	12.41	23.22	592.41	35.6303			
	592.41	12.88	22.75	579.53	35.6303			
4	579.53	13.38	22.25	566.15	35.6303	0.9107	1.5591	2.4699
	566.15	13.89	21.74	552.26	35.6303			
	604.82	52.55	89.97	552.26	142.5213			
	552.26	14.42	21.21	537.84	35.6303			
	537.84	14.98	20.65	522.86	35.6303			
5	522.86	15.55	20.08	507.31	35.6303	1.0589	1.4110	2.4699
	507.31	16.15	19.48	491.16	35.6303			
	552.26	61.10	81.42	491.16	142.5213			
	491.16	16.77	18.86	474.39	35.6303			
	474.39	17.41	18.22	456.98	35.6303			
6	456.98	18.08	17.55	438.90	35.6303	1.2312	1.2387	2.4699
	438.90	18.78	16.85	420.12	35.6303			
	491.16	71.04	71.48	420.12	142.5213			
	420.12	19.50	16.13	400.62	35.6303			
	400.62	20.25	15.38	380.37	35.6303			
7	380.37	21.02	14.61	359.35	35.6303	1.4314	1.0384	2.4699
	359.35	21.83	13.80	337.52	35.6303			
	420.12	82.60	59.92	337.52	142.5213			
	337.52	22.67	12.96	314.85	35.6303			
	314.85	23.54	12.09	291.31	35.6303			
8	291.31	24.44	11.19	266.87	35.6303	1.6643	0.8056	2.4699
	266.87	25.38	10.25	241.48	35.6303			
	337.52	96.04	46.48	241.48	142.5213			
	241.48	26.36	9.27	215.13	35.6303			
	215.13	27.37	8.26	187.76	35.6303			
9	187.76	28.42	7.21	159.34	35.6303	1.9350	0.5348	2.4699
	159.34	29.51	6.12	129.82	35.6303			
	241.48	111.66	30.86	129.82	142.5213			
	129.82	30.65	4.99	99.18	35.6303			
	99.18	31.82	3.81	67.36	35.6303			
Total	67.36	33.04	2.59	34.31	35.6303	2.2498	0.2201	2.4699
	34.31	34.31	1.32	(0.00)	35.6303			
	129.82	129.82	12.70	(0.00)	142.5213			

