



Registrar

# National Electric Power Regulatory Authority

## Islamic Republic of Pakistan

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No.NEPRA/R/TRF-115/SHL-2008/640-642  
February 13, 2009

Subject: **Authority's Decision on the Central Power Purchasing Agency's Request for the Procurement of Power from Star Hydropower Ltd. – Patrind Hydropower Project (Case # NEPRA/TRF-115/SHL-2008)**  
Intimation of Decision 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 Decision of the Authority along with Annexure-I & II (14 pages) in Case No. NEPRA/TRF-115/SHL-2008.

2. The Decision is being intimated to the Federal Government for the purpose of notification of the approved tariff in the official gazette pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997).

3. Please note that the Decision of the Authority along with Annexure-I & II (12 pages) needs to be notified in the official gazette.

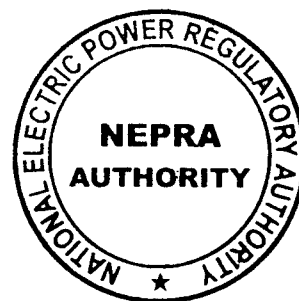
Enclosure: As above

The Secretary  
Cabinet Division  
Government of Pakistan  
Cabinet Secretariat  
Islamabad

CC:

1. Secretary, Ministry of Water & Power, Islamabad.
2. Secretary, Ministry of Finance, Islamabad.

( Hussnain Zaigham )



**NATIONAL ELECTRIC POWER REGULATORY AUTHORITY  
(NEPRA)**

**\*\*\***

**Case No. NEPRA/TRF-115/SHL-2008**

**DECISION OF THE AUTHORITY  
ON  
POWER PROCUREMENT REQUEST**

**Filed by**

**Central Power Purchasing Agency  
(CPPA)**

**For**

**Star Hydropower Limited -  
Patrind Hydropower Project**

**NATIONAL ELECTRIC POWER REGULATORY AUTHORITY  
(NEPRA)**

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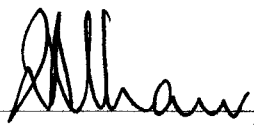
Case No. NEPRA/TRF-115/SHL-2008

**Petitioner**

Central Power Purchasing Agency (CPPA)  
for Star Hydropower Limited – Patrind Hydropower Project

**AUTHORITY**

Zafar Ali Khan  
Member

  
11/2/09

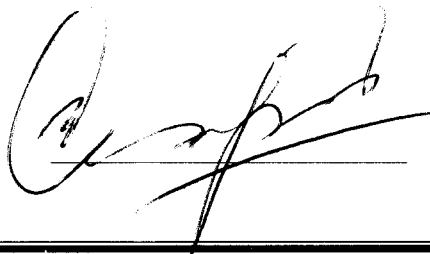
Ghiasuddin Ahmed  
Member

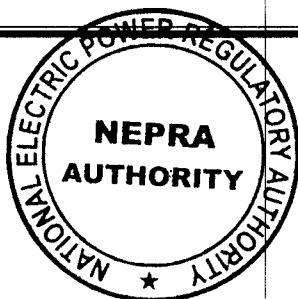


Maqbool Ahmad Khawaja  
VC/Member



Khalid Saeed  
Chairman







**The Authority's Decision on the Central Power Purchasing Agency's request for the procurement of power from Star Hydropower Limited - Patrind Hydropower Project**

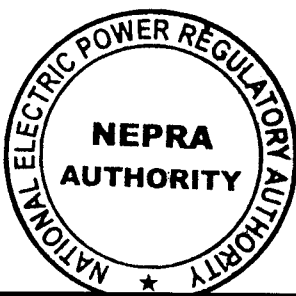
Central Power Purchasing Agency (CPPA) (hereinafter the "Petitioner") submitted its request for acquisition of power procurement and approval of the negotiated tariff along with the agreed terms and conditions, from Star Hydropower Limited (SHL) in respect of its Patrind Hydropower project. The aforesaid generation facility is located in the territory of Azad Jammu and Kashmir (AJ&K), an area where the NEPRA Act is not applicable. The instant request has, therefore, been made under the NEPRA Interim Power Procurement (Procedures and Standards) Regulations 2005 (IPPR).

2. The determination is particularly significant as it requires NEPRA to evaluate CPPA's request and to ascertain the viability of mutually agreed tariff and the terms thereof, for SHL's Project located in the territory of Azad Jammu and Kashmir (hereinafter referred to as the "**AJ&K**") which does not fall under NEPRA's territorial jurisdiction. The determination, inter alia, deals with the following:

- (i) CPPA's role as a Power Purchaser/power procurer;
- (ii) the scope and extent of NEPRA's review in determining the prudence (or otherwise) of the Negotiated Tariff and evaluation of supporting evidence; and
- (iii) facilitation offered to the generation companies located outside NEPRA's territorial jurisdiction

3. CPPA has requested for the approval of a tariff of US cents 6.29/kWh (Rs. 3.84/kWh) at PKR 61 to 1 US Dollar, levelized over thirty (30) years of proposed contract period net of 7.5% Withholding tax together with the terms and conditions of the tariff agreed mutually with SHL (hereinafter referred to as the "**Negotiated Tariff**").

4. Since CPPA made its procurement request under IPPR, therefore, it needs to be recognized that there are two distinct stages for NEPRA's approval of a request. The first stage envisages NEPRA's permission for CPPA to procure power, whereas at the second stage, CPPA is expected to bring a contract including prices and other terms and conditions before the Authority for approval. Ideally CPPA should have negotiated with the sellers once it gets NEPRA's permission. However, based on the feed back received from various stakeholders, the Authority observed that only permission for power acquisition to CPPA would not be taken favorably by the power sellers located in AJ&K. On one hand the power sellers in AJ&K expect such procedural flexibility as available to other generation facilities which are located within NEPRA's jurisdiction, and on the other they need to be assured that their agreed tariff with CPPA has full backing of the regulator. According to them such assurance would enable them to negotiate with the prospective lenders. In addition while considering CPPA's request for approval of negotiated tariff at the feasibility stage, the Authority felt that approval of tariff in advance ('Advance tariff') is one of the various means allowed in the NEPRA Act and the rules, regulations made thereunder. Under Rule 6(d) of the NEPRA (Generation) Rules, 2000, the approval of tariff in advance for a hydropower project has been left at the discretion of the Authority as one of the legally permissible means of determining tariff. The



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Authority, therefore, considers it proper that while granting permission to CPPA, its negotiated tariff may also be considered for approval at this stage.

5. As for NEPRA's prudency review of costs, it is to be noted that the negotiated tariff between CPPA and the power seller (SHL) is based on feasibility level costs. Although there are various issues which can be considered to ascertain the – reasonability of various cost components and technical parameters, however, at this stage and in order to remain consistent, NEPRA will accord deference to the figures which were considered in the feasibility study and approved by the PPIB's panel of experts. This approach is in line with the NEPRA previous determination in another project namely Suki Kinari Hydropower Project; where it was concluded that though costs are non-firm, no detailed prudence of various project cost components of tariff shall be done at this stage. So as not to discriminate CPPA's procurement request, the Authority also decided not to carryout detailed prudence of costs and other project parameters in the instant case.

6. The aforesaid approach is in accordance with the Mechanism for Tariff Determination for Hydropower Projects (the " Mechanism"); a document circulated by NEPRA to facilitate and streamline tariff issues for hydropower projects. The mechanism envisages that after obtaining a tariff based on feasibility study the sponsors may come to NEPRA, if they wish so, for their tariff determination at the EPC stage. By allowing so the Authority in-fact not only recognized the non-firm nature of costs and other project parameters, it also established that for such projects it would carryout detailed prudence of project parameters at the EPC stage. Therefore CPPA's request will also be considered by the Authority on similar lines.

7. However, while reviewing the request of the Petitioner the Authority observed some inconsistency vis-a-vis, the tariffs determined for other hydropower projects. In this regard the following parameters needed to be treated uniformly, which have been discussed hereunder.

- i) Financial charges;
- ii) debt servicing specifically relevant to overall length of repayment period;
- iii) return on equity;
- iv) other adjustments/indexation with reference to currency

8. Financial charges

CPPA has proposed US\$ 5.470 million as arrangement fee and US\$ 3.0 million as financial charges and other fees. In the case of other hydropower projects, the Authority has allowed up to a maximum of 3% of the total loan amount as financial charges including fees. On the same principle, a US\$ 5.225 million is hereby approved as financial charges/arrangement fee for the SHL Project.

9. Based on the aforesaid the approved EPC cost and the total project cost for SHL amounts to US\$ 182.926 million and US\$ 237.453 million respectively in accordance with the following break-down.

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Project cost Component	US\$ Million
Civil Works excluding Land	101.483
E & M Equipment excluding Custom Duty	80.858
Switch yard civil works	0.584
<b>EPC Cost</b>	<b>182.925</b>
Land, Rehabilitation and environmental costs	0.782
Custom Duty	2.830
Insurance During Construction	2.000
Feasibility/project development/other fees	4.000
Legal & Advisory fees & charges	2.100
Construction Period Overheads	2.200
Construction Management/Owner's Engineer	2.500
Debt Arrangement/Other financial charges	5.225
<b>Total Capital Expenditure</b>	<b>204.562</b>
Interest During Construction	32.891
<b>Total Project Cost</b>	<b>237.453</b>

#### 10. Debt Servicing

The Authority considers it just and fair to expect that the period of debt servicing (repayment of debt) negotiated with the lenders should be proportionate to the useful (contracted) life of the project, so that the benefit of diluted debt servicing in the initial years of plant operation could be passed on to the end consumers. Nevertheless, considering the current market situation, the Authority has decided to base debt servicing for hydropower projects on at least twelve (12) years of operation of the plant after the Commercial Operations Date (the "COD") as done in the case of other hydropower projects. Accordingly, the term for repayment of loans (the "Debt") in the instant case has been changed from bi-annual repayment of Debt spread over eleven (11) years, as proposed by the Petitioner, to quarterly repayment of Debt spread over twelve (12) years period.

#### 11. Return on Equity

The negotiated rate of return of 18% (IRR based) is higher as compared to the 17% return on equity (IRR based) approved for other hydropower projects, which, it may be clarified, is already 2% more than what is allowed to thermal projects and wind power projects. Accordingly, 17% return on equity (IRR based) inclusive of the project construction period of four and a half (4.5) years has been approved. Since the project is on BOOT basis, therefore, redemption of Equity has been allowed proportionately in the remaining eighteen (18) years of contract life which would begin at the 12<sup>th</sup> anniversary of actual plant operations from COD.



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12. Insurance expense for the plant operational phase

CPPA has proposed annual insurance expense at the rate of @1% of EPC which works out to be US\$ 1.829 million and thus approved.

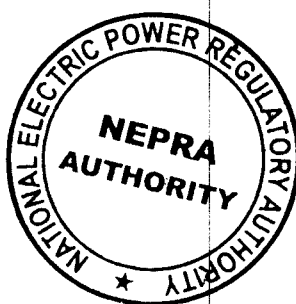
13. Reference currency exchange rate

CPPA has based its working of a negotiated tariff on exchange rate of US\$ to PKR 61. The current PKR/US\$ exchange rate has changed significantly. It is, therefore, considered necessary that the various components of costs based on foreign currency i.e. USD be reflected in the local currency PKR at the prevailing exchange rate. Accordingly, the current US\$/ PKR exchange rate of 1:79 has been used as a reference for the calculation of the tariff.

14. Adjustment of cost of reopeners and price escalation

CPPA is entitled to cost adjustments due to geological uncertainties and price escalation in cement, steel labor and fuel in accordance with the procedure laid down in the Mechanism. Since, the Negotiated Tariff is on the basis of feasibility level costs and Bill of Quantities (BOQ) are not yet firm, therefore, are liable to change at the EPC stage. The parties are therefore, advised to pursue further negotiations for the finalization and submission of bilateral contract(s) on the basis of firm EPC cost and BOQ for all the civil works, for the approval of the Authority in accordance with the NEPRA IPPR without unreasonable delay. The necessary adjustment in EPC cost shall, however, be allowed, subject to the provision of all the information/data by the CPPA to NEPRA in accordance with the Mechanism.

15. In view of the discussion in the foregoing the Authority approves the Advance Tariff (levelized) of Rs. 4.8223/kWh (US cents 6.1042/kWh) for procurement of power from SHL Project as per component-wise tariff attached herewith as Annex-I.



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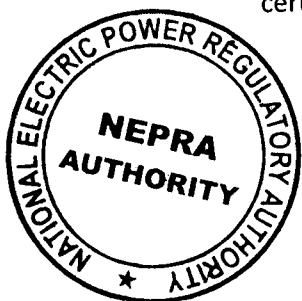
**Order**

16. The Authority has approved the following tariff (hereinafter the "Advance Tariff") along with the terms and conditions based on feasibility level costs under the NEPRA Interim Power Procurement (Procedures & Standards) Regulations 2005 (IPPR), for procurement of power by CPPA from Star Hydropower Limited (SHL) in respect of its 150 MW Patrind Hydropower Project for onward sales to the Distribution companies.

**Advance Tariff**

Tariff Components	Year 1-12	Year 13-30	Indexation
<b>Fixed Charges (Rs/kW/Month)</b>			
Fixed O&M Local	134.3537	134.3537	WPI
Insurance	81.9222	81.9222	PKR/US\$
Debt Service	1061.3637	-	LIBOR
Return on Equity	451.9549	480.4174	PKR/US\$
ROE during Construction	154.0677	154.0677	PKR/US\$
<b>Variable Charge (Rs/kWh)</b>			
Variable O&M	0.0900	0.0900	WPI
Water Use Charge	0.1500	0.1500	WPI

- i) The Advance tariff has been calculated on the basis of Net Contracted Capacity of 147 MW and benchmark annual energy production of 632.628 GWh at net annual plant capacity factor of 49.13%.
- ii) Hydrological risk shall be borne by the Power Purchaser in accordance with the 2002 Power Policy.
- iii) No adjustment for Certified Emission Reductions (CERs) has been accounted for. Upon actual realization of CERs, the proceeds shall be distributed between the Power Purchaser and SHL in accordance with the 2002 Power Policy.
- iv) The above tariff is applicable for a period of thirty (30) years on BOOT basis commencing from the date of the COD.
- v) Debt service shall be paid in the first twelve (12) years of commercial operation of plant after COD.
- vi) Redemption of equity has been allowed after 12 years of commercial operation of the plant and proportionately spread over rest of the contracted life of the project.
- vii) The component-wise tariff is indicated at Annex-I. Debt Service Schedule is attached as Annex-II.
- viii) CPPA is directed to take due notice of the requirements under the 2002 Power Policy about the use of indigenous resources.
- ix) The Petitioner is entitled to adjustment of cost reopeners and cost escalation in the civil works. Such adjustment will be allowed subject to provision of the required information/data in accordance with the Mechanism approved by NEPRA, along with duly certified copies of the EPC contract and the Power Purchase Agreement for approval by





the Authority under the NEPRA Interim Power Procurement (Procedures & Standards) Regulations 2005.

The following indexations shall be applicable to the tariff;

# **I. One Time Adjustment**

## **(i) Adjustment due to variation in Net Capacity**

The tariff for the Capacity Charge has been determined on the basis of net capacity of 147 MW. The fixed tariff components (CPP) shall be adjusted at the time of COD based upon the Initial Dependable Capacity (IDC) test to be carried out for determination of contracted capacity. Adjustment shall not be made if the IDC is established at less than 147 MW. The adjustment will be made according to the formula:

$$CC_{(Adj)} = CC_{(Ref)} \times 147 \text{ MW} / NC_{(IDC)}$$

Where;

$CC_{(Adj)}$  = Adjusted relevant capacity charge component of tariff

$CC_{(Ref)}$  = Reference relevant capacity charge component of tariff.

$NC_{(IDC)}$  = Net Capacity at reference site conditions established at the time of IDC test.

Note: Above formula shall be applicable to all the individual relevant components of the Capacity Charge

## **(ii) Cost of Debt**

The total amount of debt has been assumed at 75% of the total project cost. Debt service component of tariff has been based on 100% foreign financing. The Principal repayment and the cost of debt shall be adjusted at Financial Closing as per actual borrowing composition i.e. Local and/or Foreign as the case may be.

## **(iii) Interest During Construction**

Interest During Construction (IDC) has been estimated as US\$ 32.891 million. This will be adjusted at COD on account of actual variation in interest on the basis of actual drawdown for the period of 4.5 years of project construction. CPPA shall submit relevant documents to NEPRA within fifteen (15) days of COD for adjustment of relevant tariff components.

## **(iv) Adjustment due to Custom Duty and Taxes**

Custom Duty amounting to US\$ 2.830 million has been taken as reference. The petitioner shall be allowed adjustment in the relevant components of tariff due to any variation on account of actual payment of custom duties through provision of documentary evidence at the time of COD. The Withholding Tax @6% on local services has been included in the project cost. Any variation on the basis of actual Withholding tax shall be adjusted in the cost.



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(v) Adjustment for variation in Dollar/Rupee parity

Relevant components of the tariff shall be adjusted at COD on account of actual variation in PKR/US\$ parity over the reference PKR/US\$ rate of Rs. 79.00.

**II. Pass-Through Items**

No provision for income tax has been accounted for in the tariff. If the power producer is obligated to pay any tax, the exact amount paid by the company shall be reimbursed by the Power Purchaser to the company on production of original receipts. This payment should be considered as pass-through payment (Rs/kW/M) spread over a twelve (12) months period in addition to fixed charges of the Tariff.

Withholding tax on dividends is also a pass through item just like other taxes as indicated in the government Guidelines. Withholding tax shall be paid @ 7.5% (or the applicable rate) of the reference equity. The Power Purchaser shall make payment on account of withholding tax at the time of actual payment of dividend subject to maximum of 7.5% (or the applicable rate) of 17% equity according to the following formula:

$$\text{Withholding Tax Payable} = \{[17\% * (E_{(\text{Ref})} - E_{(\text{Red})})] + \text{ROEDC}_{(\text{Ref})}\} \times 7.5\%$$

Where:

$E_{(\text{Ref})}$  = Adjusted Reference Equity at COD

$E_{(\text{Red})}$  = Equity Redeemed

$\text{ROEDC}_{(\text{Ref})}$  = Reference Return on Equity During Construction

In case the Company does not declare a dividend in any particular year or only declares a partial dividend, then the difference in the withholding tax amount (between what has been 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 as a pass through item from the Power Purchaser in future on the basis of the total dividend pay out.

**III. Hydrological Risk**

Hydrological risk will be borne by the Power Purchaser in accordance with the 2002 Power Policy.

**IV. Indexations:**

The following indexation shall be applicable to the tariff;

(a) Indexation applicable to O&M

The local part of O&M cost will be adjusted on account of Inflation (WPI). Quarterly Adjustment for local inflation and exchange rate variation will be made on 1<sup>st</sup> July, 1<sup>st</sup> October, 1<sup>st</sup> January & 1<sup>st</sup> April respectively on the basis of the latest available information with respect to WPI (notified by the Federal Bureau of Statistics). The mode of indexation will be as under:



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(i) Fixed O&M

$$F O\&M_{(LREV)} = \text{Rs } 134.3537/\text{kW/M} * WPI_{(REV)} / 137.80$$

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)

$WPI_{(REF)}$  = 137.80 wholesale price index (manufactures) of December 2008 notified by the Federal Bureau of Statistics

(ii) Variable O&M

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

$$V O\&M_{(LREV)} = \text{Rs } 0.0900/\text{kWh} * WPI_{(REV)} / 137.80$$

Where:

$V O\&M_{(LREV)}$  = The revised variable O&M local component of the variable charge indexed with WPI.

$WPI_{(REV)}$  = Wholesale Price Index (manufactures) as notified by the Federal Bureau of Statistics.

$WPI_{(REF)}$  = 137.80, Wholesale Price Index (manufactures) of December 2008 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 from the date of COD. The first such adjustment shall be due after one year of commercial operation from COD, according to the formula;

$$WUC_{(REV)} = \text{Rs } 0.1500/\text{kWh} * WPI_{(REV)} / WPI_{(REF)}$$

Where;

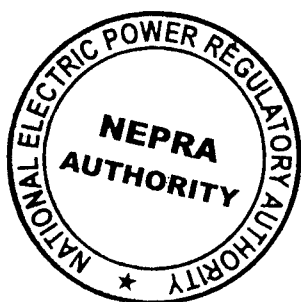
$WUC_{(REV)}$  = The revised Water Use Charge component indexed with Whole Sale Price Index (WPI)

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

$WPI_{(REF)}$  = Reference wholesale price index (manufactures) of the latest available month preceding to the date of COD as notified by the Federal Bureau of Statistics

(c) Insurance

Insurance cost component of tariff, in case of its payment by the company in foreign currency, will be adjusted on account of PKR/US\$ exchange rate variation at COD and



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thereafter on an annual basis at actual subject to the maximum of 1.35% of the EPC cost according to the following formula;

$$I_{(REV)} = \text{Rs } 81.9222/\text{kW/M} * ER_{(REV)}/79.00$$

Where;

$$I_{(REV)} = \text{Revised Insurance cost component of tariff adjusted with the exchange rate variation (PKR/US\$)}$$

$$ER_{(REV)} = \text{The Revised TT \& OD selling rate of US dollar as notified by the National Bank of Pakistan}$$

(d) Adjustment for LIBOR variation

The interest part of fixed charge component will remain unchanged throughout the term except for the adjustment due to variation in interest rate as a result of quarterly variation in three (3) month LIBOR, while premium over LIBOR remaining the same i.e 3.0%, according to the following formula:

$$\Delta I = P_{(REV)} * (LIBOR_{(REV)} - 5.40\%) / 4$$

Where:

$$\Delta I = \text{the variation in interest charges applicable corresponding to variation in three month LIBOR. } \Delta I \text{ can be positive or negative depending upon whether } LIBOR_{(REV)} > \text{ or } < 5.40\%. \text{ The interest payment obligation will be enhanced or reduced to the extent of } \Delta I \text{ for each quarter under adjustment applicable on quarterly basis.}$$

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

Note:-

In case of Local borrowing KIBOR adjustment will be made on quarterly basis according to the above mentioned mechanism. The maximum limit of the premium over KIBOR shall be 3% (300 basis points over KIBOR).

e) Return on Equity

Return on equity component of tariff shall be adjusted for variation in PKR/US\$ exchange rate. Such adjustment will be allowed at the end of every year after COD according to the following formula;

$$ROE_{(REV)} = ROE_{(REF)} * ER_{(REV)} / ER_{(REF)}$$

$$ROEDC_{(REV)} = ROEDC_{(REF)} * ER_{(REV)} / ER_{(REF)}$$



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Where;

$ROE_{(REV)}$	=	Revised Return on Equity component of tariff expressed in Rs/kW/Month adjusted with exchange rate variation (PKR/US\$).
$ROEDC_{(REV)}$	=	Revised Return on equity during construction component of tariff expressed in Rs/kW/Month adjusted with exchange rate variation (PKR/US\$).
$ROE_{(REF)}$	=	Reference ROE component of tariff expressed in Rs/kW/Month as adjusted at COD.
$ROEDC_{(REF)}$	=	Reference Return on equity during construction component of tariff expressed in Rs/kW/Month as adjusted at COD.
$ER_{(REF)}$	=	Reference TT&OD selling rate (PKR/US\$) available at the time of COD.
$ER_{(REV)}$	=	Revised TT and OD selling rate (PKR/US\$) as notified by the National Bank of Pakistan for the latest available month.

Note:-

Adjustment on account of inflation, exchange variation and LIBOR/KIBOR variation will be approved and announced by the Authority within fifteen working days after receipt of CPPA's request for adjustment in accordance with the requisite indexation mechanism stipulated hereinabove.

## V. Other Terms and Conditions of Tariff:

### Design & Manufacturing Standards:

Hydropower Generation system shall be designed, manufactured and tested in accordance with the latest IEC standards or other equivalent standards. All plant and equipment shall be new and of standard quality.

### Power Curve of the Hydropower Complex:

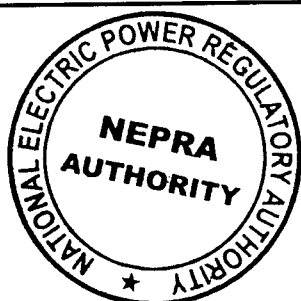
The power curve of the Hydropower plant shall be verified by the Power Purchaser, as part of the Commissioning tests according to the latest IEC standards and shall be used to measure the performance of the hydro generating units.

### Delivery Point:

The power producer shall deliver power at 132 kV/220 kV or any other voltage level, as agreed with the Power Purchaser, at the door step of its generating facility. Up-gradation of generation voltage up to 132 kV or 220 kV will be the responsibility of SHL.

### Emissions Trading/Carbon Credits:

SHL 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 purchaser.



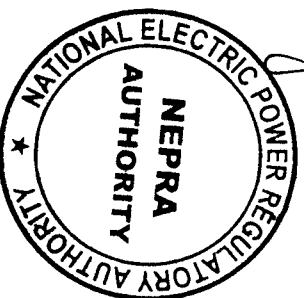
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**STAR HYDROPOWER LIMITED (Patind Hydropower Project)**  
**ADVANCE TARIFF**

Year	Variable O&M	Water Use Charge	Fixed O&M	Insurance	Return on Equity	ROE During Construction	Withholding Tax @7.5%	Loan Repayment	Interest Charges	Total Tariff
	Rs./kWh	Rs./kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs./kWh	Rs. / kWh
1	0.0900	0.1500	134.3537	81.9222	451.9549	154.0677	45.4517	403.9099	657.4538	5.6191
2	0.0900	0.1500	134.3537	81.9222	451.9549	154.0677	45.4517	438.9221	622.4416	5.6191
3	0.0900	0.1500	134.3537	81.9222	451.9549	154.0677	45.4517	476.9693	584.3944	5.6191
4	0.0900	0.1500	134.3537	81.9222	451.9549	154.0677	45.4517	518.3145	543.0492	5.6191
5	0.0900	0.1500	134.3537	81.9222	451.9549	154.0677	45.4517	563.2437	498.1200	5.6191
6	0.0900	0.1500	134.3537	81.9222	451.9549	154.0677	45.4517	612.0675	449.2962	5.6191
7	0.0900	0.1500	134.3537	81.9222	451.9549	154.0677	45.4517	665.1235	396.2402	5.6191
8	0.0900	0.1500	134.3537	81.9222	451.9549	154.0677	45.4517	722.7785	338.5652	5.6191
9	0.0900	0.1500	134.3537	81.9222	451.9549	154.0677	45.4517	785.4313	275.9324	5.6191
10	0.0900	0.1500	134.3537	81.9222	451.9549	154.0677	45.4517	853.5150	207.8487	5.6191
11	0.0900	0.1500	134.3537	81.9222	451.9549	154.0677	45.4517	927.5005	133.8632	5.6191
12	0.0900	0.1500	134.3537	81.9222	451.9549	154.0677	47.5864	1,007.8992	53.4645	2.7449
13	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
14	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
15	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
16	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
17	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
18	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
19	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
20	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
21	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
22	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
23	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
24	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
25	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
26	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
27	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
28	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
29	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
30	0.0900	0.1500	134.3537	81.9222	480.4174	154.0677	47.5864	-	-	2.7449
Levelized Tariff	0.0900	0.1500	134.3537	81.9222	459.8450	154.0677	46.0434	437.5159	329.6286	4.8223

Levelized Tariff (1-30 years) discounted at 10% per annum = US Cents 6.1042/kWh at reference exchange rate of 1US\$=Rupees 79.00.



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## STAR HYDROPOWER LIMITED (Patind Hydropower Project)

## Debt Servicing Schedule

Period	Foreign Debt					Annual Principal Repayment Rs./kW/Month	Annual Interest Rs./kW/Month	Annual Debt Servicing Rs./kW/Month
	Principal Million \$	Repayment Million \$	Mark-Up Million \$	Balance Million \$	Debt Service Million \$			
	178.09	2.18	3.74	175.90	5.9248			
	175.90	2.23	3.69	173.67	5.9248			
	173.67	2.28	3.65	171.40	5.9248			
	171.40	2.33	3.60	169.07	5.9248			
1	178.09	9.02	14.68	169.07	23.6993	403.9099	657.4538	1,061.3637
	169.07	2.37	3.55	166.70	5.9248			
	166.70	2.42	3.50	164.27	5.9248			
	164.27	2.48	3.45	161.80	5.9248			
	161.80	2.53	3.40	159.27	5.9248			
2	169.07	9.80	13.90	159.27	23.6993	438.9221	622.4416	1,061.3637
	159.27	2.58	3.34	156.69	5.9248			
	156.69	2.63	3.29	154.06	5.9248			
	154.06	2.69	3.24	151.37	5.9248			
	151.37	2.75	3.18	148.62	5.9248			
3	159.27	10.65	13.05	148.62	23.6993	476.9693	584.3944	1,061.3637
	148.62	2.80	3.12	145.82	5.9248			
	145.82	2.86	3.06	142.95	5.9248			
	142.95	2.92	3.00	140.03	5.9248			
	140.03	2.98	2.94	137.05	5.9248			
4	148.62	11.57	12.13	137.05	23.6993	518.3145	543.0492	1,061.3637
	137.05	3.05	2.88	134.00	5.9248			
	134.00	3.11	2.81	130.89	5.9248			
	130.89	3.18	2.75	127.71	5.9248			
	127.71	3.24	2.68	124.47	5.9248			
5	137.05	12.58	11.12	124.47	23.6993	563.2437	498.1200	1,061.3637
	124.47	3.31	2.61	121.16	5.9248			
	121.16	3.38	2.54	117.78	5.9248			
	117.78	3.45	2.47	114.33	5.9248			
	114.33	3.52	2.40	110.80	5.9248			
6	124.47	13.67	10.03	110.80	23.6993	612.0675	449.2962	1,061.3637
	110.80	3.60	2.33	107.20	5.9248			
	107.20	3.67	2.25	103.53	5.9248			
	103.53	3.75	2.17	99.78	5.9248			
	99.78	3.83	2.10	95.95	5.9248			
7	110.80	14.85	8.85	95.95	23.6993	665.1235	396.2402	1,061.3637
	95.95	3.91	2.01	92.04	5.9248			
	92.04	3.99	1.93	88.05	5.9248			
	88.05	4.08	1.85	83.97	5.9248			
	83.97	4.16	1.76	79.81	5.9248			
8	95.95	16.14	7.56	79.81	23.6993	722.7785	338.5852	1,061.3637
	79.81	4.25	1.68	75.56	5.9248			
	75.56	4.34	1.59	71.23	5.9248			
	71.23	4.43	1.50	66.80	5.9248			
	66.80	4.52	1.40	62.27	5.9248			
9	79.81	17.54	6.16	62.27	23.6993	785.4313	275.9324	1,061.3637
	62.27	4.62	1.31	57.66	5.9248			
	57.66	4.71	1.21	52.94	5.9248			
	52.94	4.81	1.11	48.13	5.9248			
	48.13	4.91	1.01	43.22	5.9248			
10	62.27	19.06	4.64	43.22	23.6993	853.5150	207.8487	1,061.3637
	43.22	5.02	0.91	38.20	5.9248			
	38.20	5.12	0.80	33.08	5.9248			
	33.08	5.23	0.69	27.85	5.9248			
	27.85	5.34	0.58	22.51	5.9248			
11	43.22	20.71	2.99	22.51	23.6993	927.5005	133.8632	1,061.3637
	22.51	5.45	0.47	17.05	5.9248			
	17.05	5.57	0.36	11.49	5.9248			
	11.49	5.68	0.24	5.80	5.9248			
	5.80	5.80	0.12	(0.00)	5.9248			
12	22.51	22.51	1.19	(0.00)	23.6993	1,007.8992	53.4645	1,061.3637



*Handwritten signature*