



Registrar

# National Electric Power Regulatory Authority Islamic Republic of Pakistan

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No. NEPRA/IPT-05/KHPL-2018/18366-18368

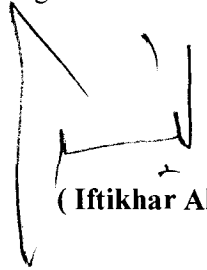
November 22, 2018

**Subject: Determination of the Authority in the matter of Proposal filed by Central Power Purchasing Agency Guarantee Limited (CPPA-G) for Approval of EPC Stage Tariff of Kathai-II Hydropower Project [Case No. NEPRA/IPT-05/KHPL-2018]**

Please find enclosed herewith the subject Determination of the Authority along with Annex-I & II (16 Pages) in Case No. NEPRA/IPT-05/KHPL-2018.

2. The Determination is being intimated to the Federal Government for the purpose of notification in the official gazette pursuant to Section 31(7) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

Encl: As above

  
22/11/18  
( Iftikhar Ali Khan )

Secretary  
Ministry of Energy (Power Division)  
Government of Pakistan  
'A' Block, Pak Secretariat,  
Islamabad

CC:

1. Secretary, Cabinet Division, Cabinet Secretariat, Islamabad.
2. Secretary, Ministry of Finance, 'Q' Block, Pak Secretariat, Islamabad

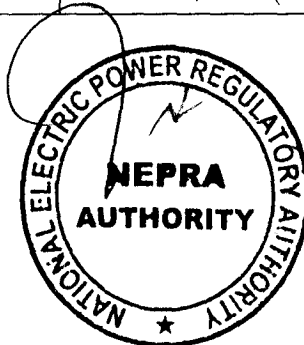
**DETERMINATION OF THE AUTHORITY IN THE MATTER OF PROPOSAL FILED BY CENTRAL POWER PURCHASING AGENCY (GUARANTEE) LIMITED FOR APPROVAL OF EPC STAGE TARIFF OF KATHAI-II HYDROPOWER PROJECT**

- 1 On the 22nd of March 2018, the Central Power Purchasing Agency (Guarantee) Limited (herein referred to as “CPPA”) filed an application along with tariff proposal under Regulation 3(1) of NEPRA (Import of Electric Power) Regulations, 2017 (IEPR-2017) to import power from Kathai-II Hydro (Private) Limited (herein referred to as “KHPL” or “Project Sponsors”) in respect of 8 MW Kathai-II Hydro power project (herein referred to as the “Project”) in AJ&K for determination of rates as proposed by the seller.
- 2 Kathai-II Hydropower Project is a high head, run-of-river scheme, which will use flows of Kathai Nullah in District Hattian Bala, Azad Jammu & Kashmir. The project weir site is proposed to be located just downstream of confluence of Kathai Nullah and Ranja Nar. Powerhouse site is proposed to be located about 5 km upstream of confluence of Kathai Nullah with Jhelum River at Chinari.
- 3 The Tariff Proposal was based on the following technical parameters:

Installed Capacity (Gross) (MW)	8.00
Auxiliary Consumption	1%
Net Capacity (MW)	7.92
Plant Factor	62.2%
Annual Generation (Gross) (GWh)	43.61
Auxiliary Consumption (1%) (GWh)	0.43
Annual Generation (Net) (GWh)	43.18

- 4 Following is a summary of the financial aspects of the tariff proposal:

Project Cost	US\$ 22.352 million
Debt to Equity Ratio	75:25
Foreign Debt	100% (with option for SBP Refinance)
Debt Tenor	10 years + 3 years (grace)
Debt Cost	Libor + 4.5%
Equity IRR	17% (USD based)
Hydrology Risk	Borne by the Project Company
Despatch	Must-Run
Proposed Tariff	Rs. 7.5812 /kWh (US cents 7.4362/kWh)



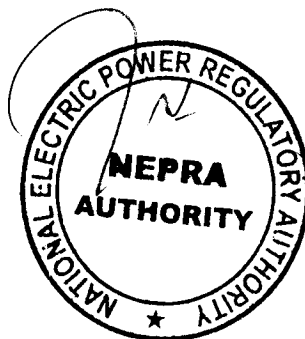
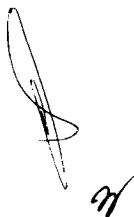
## 5 PROCEEDINGS:

- 5.1 The Authority admitted the subject Proposal, and subsequently decided to hold hearing on the matter. Accordingly, advertisement was published for general public in daily newspapers, and written notices were also dispatched to key stakeholders. No intervention request was filed by any party in response to the Authority's notice of admission and hearing. The CPPA submitted its comments on the matter vide letter no. Tech/DGMT-II/MT-IV/Kathai-II/19655-57 dated July 02, 2018.
- 5.2 Hearing in the matter was held on June 06, 2018. The hearing was attended by Project Sponsors and representatives of National Transmission & Despatch Company (NTDC), however, the CPPA did not attend the hearing. The CPPA were given the opportunity to appear before the Authority on the next day, i.e. June 07, 2018, however the CPPA again did not appear before the Authority. During the hearing the Project Sponsors proposed that certain benchmarks of the upfront tariff can be fine-tuned based on prevailing market norms in order to reduce the tariff of the project. The Authority advised the Project Sponsors to submit the relevant details in this regard. The Project Sponsors vide letter no. KATHAI-II/NEPRA/TRF/01-18 dated June 25, 2018 submitted additional information to substantiate their claim. The additional information/ revised tariff proposal was uploaded on NEPRA website for comments of stakeholders. The CPPA were also requested for input on the revised proposal, if any.

## 6 COMMENTS OF STAKEHOLDERS:

### 6.1 Central Power Purchasing Agency (CPPA)

- 6.1.1 The CPPA vide letter no. Tech/DGMT-II/MT-IV/Kathai-II/19655-57 dated July 02, 2018 provided written comments on the tariff proposal.
- 6.1.2 The CPPA stated that the Project Sponsors have submitted their consent for bearing the Hydrological Risk. The CPPA fully endorses the submission of Project Sponsors on this account that the Hydrological Risk needs to be borne by the project sponsor.
- 6.1.3 Further, CPPA suggested that the applicable regulatory framework obligates NTDCL/DISCO for assuming/settling the liabilities pertaining to the connection part of the agreement, which inter-alia includes, construction, adequacy, operations and maintenance of Interconnection facilitates for evacuation of power from the generation facility. Accordingly, the same may be taken up with the concerned DISCO/NTDCL.
- 6.1.4 Moreover, the CPPA suggested that the overall impact on the pool price with the said procurement may be ascertained in the due process of assessing the tariff application.



## 7 ISSUES

Based on the information, documents and evidence available with the Authority, the issue-wise discussion and determination of the Authority is as under:

### 7.1 **Whether the financing, construction, and maintenance of the interconnection facility can be performed by the project Company?**

7.1.1 The Project Sponsors informed that PESCO is the relevant DISCO for the Project and would have been responsible for the interconnection from the Project to the national grid. However, due to financial and technical constraints of PESCO, the sponsors are willing to take initiative of financing, constructing, operating and maintaining the interconnection line from the Project to Hattian Grid Station.

7.1.2 The Project Sponsors informed during the hearing that evacuation on 14km long 33kV line has been deemed to be the most feasible option for power evacuation, and the same has been approved by NTDC.

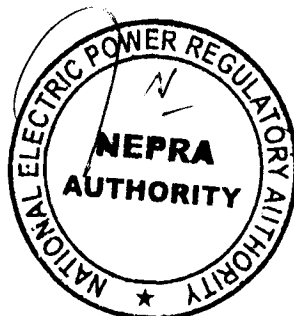
7.1.3 The Project Sponsors proposed that the Company shall conduct competitive bidding for construction of interconnection facilities to further optimize the costs and shall provide authentic verifiable/audited documents to the Authority for approval of costs pertaining to financing, construction and operations of the interconnection facilities at the time of COD.

7.1.4 The Authority agrees with the interconnection arrangement proposed by the Project Sponsors.

### 7.2 **Whether the EPC cost is justified?**

7.2.1 The Project Sponsors submitted that a firm EPC cost has been proposed based on prudent evaluation of offers received through competitive bidding and relevant benchmarks defined under the Upfront Tariff for Small hydro projects determined by the Authority. The sponsors claimed that the Company carried out transparent process of competitive bidding for selection of EPC Contractors for the Project. The Company invited bids in 2015, in accordance with a Single-Stage Two-Envelope Bidding Procedure, from the eligible bidders for construction and complete plant design, supply, installation, testing and commissioning of the Kathai-II Hydropower Project on the basis of International Competitive Bidding (ICB).

7.2.2 The Project Sponsors informed that on February 09, 2015 the bids were opened in the presence of the bidders / their representatives. Out of the five bids received, two bidders were not accepted, being not in line with contractual requirements. In this regard, the Project Sponsors submitted a copy of the bid evaluation report. The following key information and timelines have been provided in the bid evaluation report:



Project Title	Katahi - II Hydropower Project
Date of Invitation of Bids	October 13, 2014
Date Document Available	October 14, 2014
Mode of Procurement	EPC – Single-Stage Two-Envelope
Bids Closing Date & Time	09- 02- 2015 at 14:30 hrs
Bids Opening Date & Time	09-02- 2015 at 14:30 hrs
Number of Bids Received	Five
Bidding Validity Expires on	180 days after date of bid opening

7.2.3 According to the Bid evaluation report the following bids were offered by the three companies accepted under the bidding process:

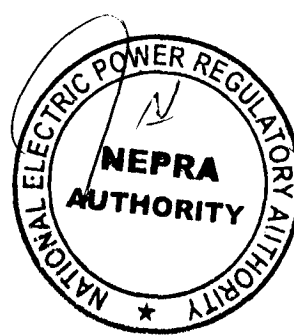
Companies	Bid (PKR Billion)	US\$ /MW millions	Ranking
Banu Mukhtar-NTF JV	1.962	2.43	1
HNAC - Habib Construction JV	1.985	2.46	2
HRL-CWTW JV	2.178	2.70	3

7.2.4 The Project Sponsors highlighted that NEPRA benchmark for EPC cost in relation to high-head projects under the Upfront tariff amounted to US\$ 2.409 million per MW, since the benchmark cost was lower than the offered EPC costs by the potential bidders, the same has been assumed by the Company to form base of its project cost. During the hearing the Project Sponsors further proposed that NEPRA may allow this cost with a proviso that in case the actual EPC costs are lower than the proposed EPC cost based on upfront tariff benchmark, then the same shall be adjusted at COD, no adjustment shall be made at COD in case the actual EPC cost is higher than the allowed cost.

7.2.5 The Project Sponsors also expressed their intention to conduct competitive bidding on the project again - since the bidding was last conducted in 2015 - with the expectation to undercut the ceiling of EPC cost being proposed to NEPRA. In this regard, the Project Sponsors are hereby directed to follow the NEPRA (Selection of EPC Contractors by IPPs) Guidelines, 2017.

7.2.6 The Authority noted that the upfront tariff benchmark of US\$ 2.409 Million/MW was based on 40% foreign and 60% local cost. The price assumed by the Project Sponsors is 100% based on foreign cost. This combined with the fact that an older USD/PKR exchange rate of 101.95 has been assumed by the Project Sponsors drastically understates the tariff of the project. Based on international and regional benchmarks, a maximum EPC cost ceiling of US\$ 16.800 Million (US\$ 2.100 Million/MW) has been determined after assuming 60% local component of EPC cost (US\$ 1.260 Million/MW) fixed in rupees (subject to adjustment detailed below) and the remaining 40% foreign component of EPC cost fixed in US\$. The actual EPC cost, if lower than

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the allowed limit, shall be adjusted at the time of COD. No adjustment shall be made at COD in case the actual EPC cost is higher than the allowed EPC cost.

### 7.3 Whether Adjustments pertaining to EPC cost are justified?

7.3.1 The Project Sponsors requested for the following adjustments in the EPC Price at Commercial Operations based on changes in prices of cement, steel, labor and fuel, as follows:

- 40% of the assumed EPC Cost will be adjusted over 36 months starting from the date of financial close of the project for USD/PKR variation.
- 60% of the assumed EPC Cost will be converted at USD/PKR exchange rate prevailing at financial close 2 and adjusted over a period of 36 months (maximum) starting from the date of financial close of the project according to the formula assumed in the upfront tariff i.e.

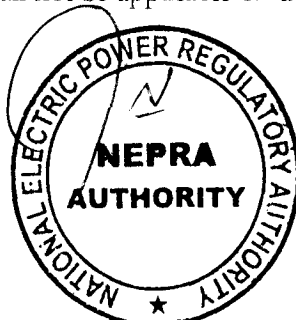
$$P_n = 0.51 + 0.10 * (C_n/C_o) + 0.15(S_n/S_o) + 0.15 * (F_n/F_o) + 0.07 * (L_n/L_o)$$

Where;

- $P_n$  is the adjustment factor to be applied for civil works;  
 $C_n$  is the index value for the relevant month for Cement as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;  
 $S_n$  is the index value for the relevant month for Steel Bar & Sheets as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;  
 $F_n$  is the index value for the relevant month for Diesel Oil as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;  
 $L_n$  is the index value for the relevant month for Mason (Raj) for Rawalpindi as per the Wage Rates published in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

$C_o$ ,  $S_o$ ,  $F_o$  and  $L_o$  are the reference values of the price indices for Cement, Steel Bar & Sheets, Diesel Oil and Mason (Raj) respectively as available at the time of financial close of the project.

7.3.2 The Authority has noted that the actual contracts have not been provided by the Project Sponsors, therefore it cannot be ascertained at this stage whether the actual terms of the contract will be in line with the relevant guidelines/ mechanisms. However, the Authority provisionally allows adjustment of EPC cost based on changes in prices of cement, steel, labor and fuel, in line with NEPRA 3 stage mechanism for hydropower projects, subject to terms of the EPC contract to be scrutinized at the time of COD. These adjustments will be made over a period of 36 months (maximum), and shall not be applicable on dollar based portion of the EPC price which



in the instant case will be 40% of the EPC as assumed under the upfront tariff. Any terms falling outside the NEPRA 3-stage mechanism for hydropower projects and the adjustment mechanism determined in the NEPRA upfront tariff shall not apply at COD.

**7.4 Whether the Non-EPC cost is justified?**

7.4.1 The Project Sponsors assumed Non-EPC cost of US\$ 0.22 Million/ MW, including Land and Development Cost of US\$ 0.171 Million/MW and Finance Fee & Charges of US\$ 0.049 Million/MW. The Company proposed a total budget of approx. US\$ 1.37 Million on account of project development and land costs, whereas financing fees & charges were assumed as 2.5% of the debt portion amounting to US\$ 0.394 million.

7.4.2 The development cost based on upfront tariff benchmarks in this case is US\$ 1.180 Million, and the same is hereby allowed. The financing fees and charges amounting to US\$ 0.277 Million have been determined on the basis of NEPRA (Benchmarks for Tariff Determination) Guidelines, 2018.

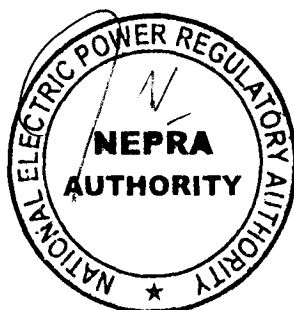
**7.5 Whether other assumptions of the tariff are justified?**

7.5.1 Other assumptions of the tariff are as under:

- Debt Equity ratio 75 : 25
- Return on Equity 17%
- Debt Mix - 100% Foreign (with option for SBP refinance)
- Interest rate of LIBOR + 4.5% for foreign loan
- O&M component of Rs. 0.9463/kWh
- Insurance during Operation at 1% of EPC cost
- Construction period of 36 months
- Exchange rate of 101.95
- Duties and Taxes not assumed

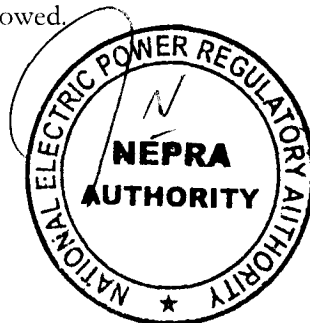
7.5.2 The NEPRA (Benchmarks for Tariff Determination) Guidelines, 2018 provide that for hydel Projects, Debt: Equity shall be approved in the range of 80: 20 to 75: 25. The debt equity structure proposed by the Project Sponsors being in line with the guidelines is accepted.

7.5.3 In order to assess reasonable benchmark IRR, the Authority initiated a market study. The Authority also considered the returns offered by various hydropower sponsors in the competitive bidding carried out by Punjab Power Development Board (PPDB) and Pakhtunkhwa Energy Development Organization (PEDO). Based thereon the Authority considers that in the instant case an IRR of 14.5% can be considered a reasonable assessment. In view thereof the same is being allowed.



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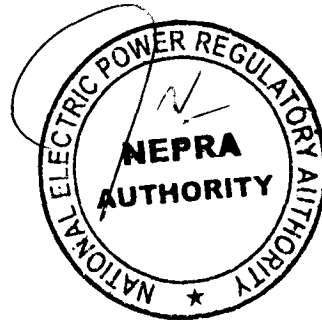
- 7.5.4 The NEPRA (Benchmarks for Tariff Determination) Guidelines, 2018 provide that in case of renewable energy projects eligible for securing debt financing under the Revised SBP Financing Scheme for Renewable Energy, a flat rate shall be approved. The Project Sponsors have offered that in case the spread negotiated is less than the said limits, the savings in the premium over SBP Base Rate shall be shared by the power purchaser and the power producer in the ratio of 60: 40 respectively. The power producer will submit relevant authentic documentary evidence to the Authority, for the aforesaid adjustment within 15 days of commercial operations date of the Project. The proposed spread over LIBOR of 4.5% is equal to the maximum limit permitted under the NEPRA (Benchmarks for Tariff Determination) Guidelines, 2018. The Authority has decided that the SBP Financing Scheme for Renewable Energy should be availed by the project first, as it reduces the levelized tariff of the project. Based thereon the Authority has assessed the debt servicing component on the assumption of 100% SBP financing (with assumed interest rate of 5.5%). Any other proposed debt terms will only be considered after the Project Sponsors have made all efforts to avail and exhaust the SBP refinancing scheme for renewable energy projects. The NEPRA (Benchmarks for Tariff Determination) Guidelines, 2018 shall be followed in case actual debt servicing is KIBOR/LIBOR based.
- 7.5.5 The Authority observed that the O&M cost claimed by the Project Sponsors is on the higher side and decided to rationalize the same. In this regard, international benchmarks and actual O&M cost of recent WAPDA projects was considered for making fair assessment. Based thereon, total O&M cost of Rs. 0.9797/kWh has been assessed for the Project, split into foreign (Rs. 0.2821/kWh) and local (Rs. 0.6976/kWh) O&M components.
- 7.5.6 The NEPRA (Benchmarks for Tariff Determination) Guidelines, 2018 stipulate that the insurance costs shall be approved as a percentage of EPC Costs at the rate of 1.00% for hydel projects up to 50MW. Therefore, the Authority has decided to allow insurance during operation at 1.00% of allowed EPC cost.
- 7.5.7 The Project Sponsors did not submit equity injections and debt drawdown patterns. Therefore, equity and debt drawdown pattern of the upfront tariff has been used for the purpose of calculation. ROEDC and IDC will be adjusted at COD based on debt and equity drawdowns over a maximum construction period of 36 months. Accordingly, IDC amounting to US\$ 1.339 Million has been assessed.
- 7.5.8 The Authority observed that the exchange rate assumed by the Project Sponsors is not representative of the prevailing exchange rate, resulting in a visibly understated tariff, therefore all calculations have been based on the USD/PKR exchange rate of 121.
- 7.5.9 Further, the Authority observed that exclusion of duties and taxes artificially understates the tariff of the project. Therefore, to estimate the true cost of electricity at the time of COD, duties and taxes amounting to US\$ 0.466 Million @ 6.05% of the offshore assumed EPC cost have been included in the tariff.
- 7.5.10 For all adjustments, where applicable, the NEPRA (Benchmarks for Tariff Determination) Guidelines, 2018 will be followed.





7.6 **Whether hydrological risk will be borne by the power purchaser?**

- 7.6.1 The Project Sponsors submitted that the hydrological risk will be borne by the Power Producer, and requested the Authority to allow all power generated by the Complex/Power Producer to sell & procured by the Power Purchaser at the prevailing tariff of the Project.
- 7.6.2 In this regard CPPA commented that the Project Sponsors should bear the hydrological risk. In addition, a mechanism should be designed for sharing the bonus energy between the Purchaser and the Seller, as is the case for other renewable power projects.
- 7.6.3 The Authority observed that since the project will bear the full hydrological risk, the full upside as well as full downside for changes in hydrology shall be passed on to the Project Sponsors and not the power purchaser. Therefore, all energy shall be sold at the same prevailing rate without sharing.



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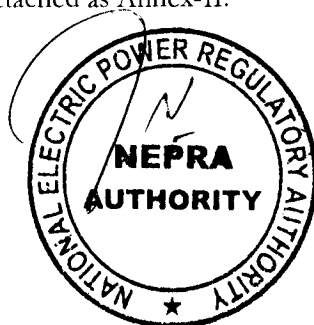
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**8. ORDER:**

The Authority, in exercise of its powers under Regulation 4(3) of the NEPRA (Import of Electric Power) Regulations, 2017, has decided to approve the following rates and terms and conditions for import of electric power by Central Power Purchasing Agency (CPPA) from Kathai-II Hydro (Private) Limited:

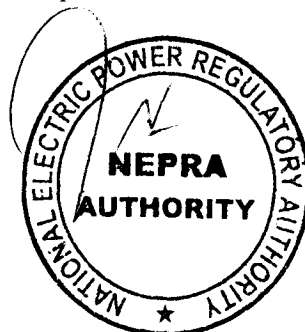
Tariff Components	Year 1-10	Year 11-30	Indexation
<b>Variable Charge (Rs/kWh)</b>			
O&M - Local	0.6976	0.6976	Pakistan CPI
O&M - Foreign	0.2821	0.2821	PKR/US\$, US CPI
Water Use Charge	0.4250	0.4250	
Insurance	0.4708	0.4708	PKR/US\$, if applicable
Debt Service (Local)	5.5097	5.5097	
Return on Equity (ROE)	2.0378	2.1834	PKR/US\$
ROE During Construction	0.5316	0.5316	PKR/US\$

- i. The reference tariff has been calculated on the basis of net contracted capacity of 8.000 MW and net annual energy production of 43.180 GWh.
- ii. In the above tariff, no adjustment for Carbon Emission Reduction receipts (CERs) has been accounted for. However, upon actual realization of CERs, the same shall be distributed between the Power Purchaser and KHPL in accordance with the GOP Policy for Power Generation Projects 2002 as amended from time of time.
- iii. The above tariff is applicable for a period of thirty (30) years on BOOT basis commencing from Commercial Operation Date (COD).
- iv. Debt service will be paid in the first 10 years of commercial operation of plant after COD.
- v. In case, the loan spreads are agreed at lower than the allowed spread, the benefit of such reduction in rate will be adjusted in proportion of 40% to the Project Company and 60% to the consumer through necessary adjustment in tariff.
- vi. Redemption of equity has been allowed after 10 years of commercial operation of the plant.
- vii. The reference PKR/Dollar rate has been assumed at 1 USD = 121 PKR.
- viii. The component wise tariff is indicated at Annex-I.
- ix. Debt Servicing Schedule is attached as Annex-II.



**I. One-Time Adjustments**

- a. The Principal repayment and the cost of debt will be adjusted at COD as per the borrowing composition.
- b. Interest During Construction (IDC) will be adjusted at COD on the basis of actual debt composition, debt drawdown of loan (not exceeding the amount allowed by the Authority) and applicable interest rate during the actual project construction period (not exceeding the construction period allowed by the Authority).
- c. The specific items of project cost to be paid in foreign currency will be adjusted at COD on account of actual variation in exchange rate over the reference PKR/US\$ exchange rate of Rs. 121 on production of verifiable documentary evidence to the satisfaction of the Authority.
- d. Duties and/or taxes, not being of refundable nature, imposed on the Company up to the commencement of its commercial operations for the import of its plant, machinery and equipment will be adjusted on actual basis at COD, as against reference allowed amount of US\$ 0.466 Million, upon production of verifiable documentary evidence to the satisfaction of the Authority.
- e. Civil Works Cost will be adjusted on account of variation in the price of construction material (Cement, Steel, Labour and Fuel) during the project construction period based on the price adjustment mechanism decided by the Authority.
- f. Financial charges will be adjusted at COD on the basis of actual subject to the maximum of 2% of the total debt allowed (excluding the impact of interest during construction and financial charges) on production of authentic documentary evidence.
- g. Return on Equity (ROE) and Return on Equity During Construction (ROEDC) will be calculated at COD on the basis of actual equity injections and PKR/US\$ exchange rate variation (within the overall equity allowed by the Authority at COD) over the construction period of 36 months allowed by the Authority.
- h. The Company shall submit the relevant water use agreement as part of the onetime adjustment at COD and the tariff shall be adjusted to incorporate water use charge accordingly.
- i. The reference tariff table shall be revised at COD while taking in to account the above adjustments. KHPL shall submit its request to the Authority within 90 days of COD for necessary adjustments in tariff.



**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 such tax, the exact amount paid by the power producer (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 spread over a twelve (12) months period in addition to fixed charges in the Reference Tariff.

**III. Hydrological Risk**

Hydrological Risk shall be borne by the Power Producer.

**IV. Indexation**

The following indexations during operational period shall be applicable to the reference tariff:

i) O&M

The local part of O&M will be adjusted on account of Inflation (CPI General), whereas the foreign part of O&M will be adjusted on account of Rupee/Dollar exchange rate variation 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 CPI General (or alternative index as determined by the Authority), US CPI (notified by US bureau of labor statistics) and revised TT & OD Selling rate of US Dollar (notified by the National Bank of Pakistan). The mode of indexation will be as under:

$$\begin{aligned} O\&M_{(L,REV)} &= O\&M_{(L,REF)} * CPI_{(REV)} / CPI_{(REF)} \\ O\&M_{(F,REV)} &= O\&M_{(F,REF)} * USCPI_{(REV)} / USCPI_{(REF)} * ER_{(REV)} / ER_{(REF)} \end{aligned}$$

Where:

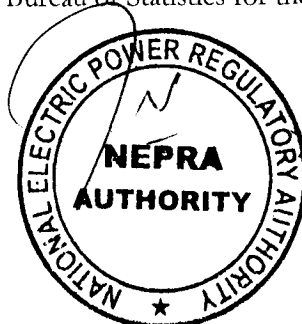
$O\&M_{(L,REV)}$  = The revised applicable O&M local component of tariff indexed with Pakistan CPI (General).

$O\&M_{(F,REV)}$  = The revised applicable O&M foreign component of tariff indexed with US CPI and exchange rate variation.

$O\&M_{(L,REF)}$  = The reference O&M local component of tariff for the relevant period.

$O\&M_{(F,REF)}$  = The reference O&M foreign component of tariff for the relevant period.

$CPI_{(REV)}$  = The Revised Pakistan CPI (General) as notified by the Pakistan Bureau of Statistics for the relevant month.



- $CPI_{(REF)}$  = The Reference Pakistan CPI (General) of June 2018 as notified by the Pakistan Bureau of Statistics.
- $US\ CPI_{(REV)}$  = The Revised US Consumer Price Index (All Urban Consumers) notified by the Bureau of Labor Statistics.
- $US\ CPI_{(REF)}$  = Reference US CPI (All Urban Consumers) notified by the Bureau of Labor Statistics for the month of June 2018.
- $ER_{(REV)}$  = The revised TT and OD selling rate of US dollar as notified by the National Bank of Pakistan.
- $ER_{(REF)}$  = The reference TT and OD selling rate of US dollar of 121

ii) Water Use Charges

Water Use Charge will be paid on units delivered basis and revised/ indexed as per applicable government policy.

iii) Insurance

Insurance cost component of tariff, in case insurance is denominated in foreign currency, will be adjusted on account of PKR/US\$ exchange rate variation at COD and thereafter on an annual basis at actual subject to the maximum of 1% of the EPC cost on production of authentic documentary evidence by KHPL, according to the following formula:

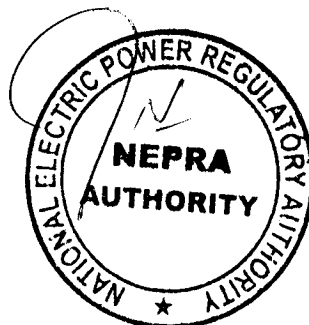
$$Ins_{(REV)} = Ins_{(REF)} * ER_{(REV)} / ER_{(REF)}$$

Where;

- $Ins_{(REV)}$  = Revised Insurance cost component of tariff adjusted with the exchange rate variation (PKR/US\$)
- $Ins_{(REF)}$  = Reference insurance cost component of tariff for the relevant period.
- $ER_{(REV)}$  = The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan.
- $ER_{(REF)}$  = The reference TT & OD selling rate of US dollar as notified by the National Bank of Pakistan.

v) Return on Equity

Return on equity (ROE) as well as Return on Equity during Construction (ROEDC) component of tariff shall be adjusted for variation in PKR/US\$ exchange rate according to the following formula:



$$\begin{aligned} \text{ROE}_{(REV)} &= \text{ROE}_{(REF)} * \text{ER}_{(REV)}/\text{ER}_{(REF)} \\ \text{ROEDC}_{(REV)} &= \text{ROEDC}_{(REF)} * \text{ER}_{(REV)}/\text{ER}_{(REF)} \end{aligned}$$

Where;

$$\begin{aligned} \text{ROE}_{(REV)} &= \text{Revised Return on Equity component of tariff expressed in Rs/kWh adjusted with exchange rate variation.} \\ \text{ROEDC}_{(REV)} &= \text{Revised Return on Equity during Construction component of tariff in Rs/kWh adjusted with exchange rate variation.} \\ \text{ROE}_{(REF)} &= \text{Reference Return on Equity component of tariff expressed in Rs/kWh for the relevant period.} \\ \text{ROEDC}_{(REF)} &= \text{Reference Return on Equity during Construction component of tariff expressed in Rs/kWh for the relevant period.} \\ \text{ER}_{(REV)} &= \text{Revised TT and OD selling rate of US dollar as notified by the National Bank of Pakistan.} \\ \text{ER}_{(REF)} &= \text{Reference TT and OD selling rate of US dollar.} \end{aligned}$$

Note: -

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

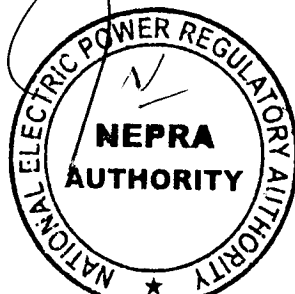
## V. Other Terms and Conditions of Tariff

### Design & Manufacturing Standards:

Hydel Power 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 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.



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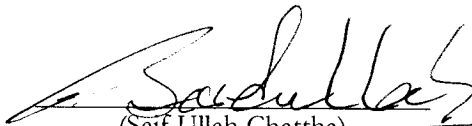
Emissions Trading/Carbon Credits:


KHPL shall process and obtain emissions/carbon credits expeditiously and credit the proceeds to the Power Purchaser as per the policy issued by the Federal Government.

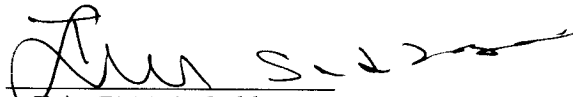
9. The above approved rates and terms and conditions are being intimated to the Federal Government for notification in the official Gazette as per Section 31(7) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 read with regulation 4(4) of the NEPRA (Import of Electric Power) Regulations, 2017.

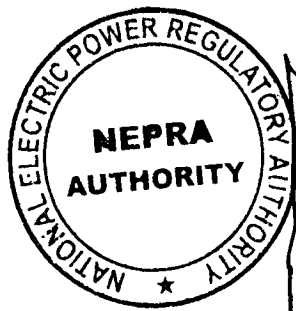
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**AUTHORITY**

  
(Saif Ullah Chattha)  
Member 19.11.2018

  
19/11/2018  
(Rehmatullah Baloch)  
Member

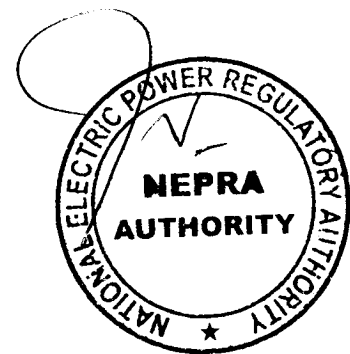
  
(Brig (R) Tariq Saddozai)  
Chairman

  
22-11-18

## Annex-I

### Kathai-II HPP REFERENCE TARIFF

Year	O&M Local	O&M Foreign	Water Use Charge	Insurance	Return on Equity (ROE)	ROE During Construction	Debt Service	Total Tariff
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh
1	0.6976	0.2821	0.4250	0.4708	2.0378	0.5316	5.5097	9.9545
2	0.6976	0.2821	0.4250	0.4708	2.0378	0.5316	5.5097	9.9545
3	0.6976	0.2821	0.4250	0.4708	2.0378	0.5316	5.5097	9.9545
4	0.6976	0.2821	0.4250	0.4708	2.0378	0.5316	5.5097	9.9545
5	0.6976	0.2821	0.4250	0.4708	2.0378	0.5316	5.5097	9.9545
6	0.6976	0.2821	0.4250	0.4708	2.0378	0.5316	5.5097	9.9545
7	0.6976	0.2821	0.4250	0.4708	2.0378	0.5316	5.5097	9.9545
8	0.6976	0.2821	0.4250	0.4708	2.0378	0.5316	5.5097	9.9545
9	0.6976	0.2821	0.4250	0.4708	2.0378	0.5316	5.5097	9.9545
10	0.6976	0.2821	0.4250	0.4708	2.0378	0.5316	5.5097	9.9545
11	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
12	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
13	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
14	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
15	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
16	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
17	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
18	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
19	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
20	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
21	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
22	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
23	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
24	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
25	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
26	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
27	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
28	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
29	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
30	0.6976	0.2821	0.4250	0.4708	2.1834	0.5316	-	4.5904
<b>Levelized Tariff</b>	<b>0.6976</b>	<b>0.2821</b>	<b>0.4250</b>	<b>0.4708</b>	<b>2.0885</b>	<b>0.5316</b>	<b>3.5913</b>	<b>8.0868</b>





**Kathai-II HPP**  
**Debt Servicing Schedule for the Purpose of Indexation of Debt Component Only**

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.			
	1,820.58	34.44	25.03	1,786.14	59.4771			
	1,786.14	34.92	24.56	1,751.22	59.4771			
	1,751.22	35.40	24.08	1,715.82	59.4771			
	1,715.82	35.88	23.59	1,679.94	59.4771			
1	1,820.58	140.64	97.26	1,679.94	237.9083	3.2571	2.2525	5.5097
	1,679.94	36.38	23.10	1,643.56	59.4771			
	1,643.56	36.88	22.60	1,606.68	59.4771			
	1,606.68	37.39	22.09	1,569.29	59.4771			
	1,569.29	37.90	21.58	1,531.39	59.4771			
2	1,679.94	148.54	89.37	1,531.39	237.9083	3.4400	2.0696	5.5097
	1,531.39	38.42	21.06	1,492.97	59.4771			
	1,492.97	38.95	20.53	1,454.03	59.4771			
	1,454.03	39.48	19.99	1,414.54	59.4771			
	1,414.54	40.03	19.45	1,374.51	59.4771			
3	1,531.39	156.88	81.03	1,374.51	237.9083	3.6332	1.8765	5.5097
	1,374.51	40.58	18.90	1,333.94	59.4771			
	1,333.94	41.14	18.34	1,292.80	59.4771			
	1,292.80	41.70	17.78	1,251.10	59.4771			
	1,251.10	42.27	17.20	1,208.83	59.4771			
4	1,374.51	165.69	72.22	1,208.83	237.9083	3.8371	1.6725	5.5097
	1,208.83	42.86	16.62	1,165.97	59.4771			
	1,165.97	43.44	16.03	1,122.53	59.4771			
	1,122.53	44.04	15.43	1,078.48	59.4771			
	1,078.48	44.65	14.83	1,033.83	59.4771			
5	1,208.83	174.99	62.92	1,033.83	237.9083	4.0526	1.4571	5.5097
	1,033.83	45.26	14.22	988.57	59.4771			
	988.57	45.88	13.59	942.69	59.4771			
	942.69	46.52	12.96	896.17	59.4771			
	896.17	47.15	12.32	849.02	59.4771			
6	1,033.83	184.82	53.09	849.02	237.9083	4.2801	1.2296	5.5097
	849.02	47.80	11.67	801.22	59.4771			
	801.22	48.46	11.02	752.76	59.4771			
	752.76	49.13	10.35	703.63	59.4771			
	703.63	49.80	9.67	653.83	59.4771			
7	849.02	195.19	42.72	653.83	237.9083	4.5204	0.9892	5.5097
	653.83	50.49	8.99	603.34	59.4771			
	603.34	51.18	8.30	552.16	59.4771			
	552.16	51.88	7.59	500.27	59.4771			
	500.27	52.60	6.88	447.68	59.4771			
8	653.83	206.15	31.76	447.68	237.9083	4.7742	0.7355	5.5097
	447.68	53.32	6.16	394.35	59.4771			
	394.35	54.05	5.42	340.30	59.4771			
	340.30	54.80	4.68	285.50	59.4771			
	285.50	55.55	3.93	229.95	59.4771			
9	447.68	217.73	20.18	229.95	237.9083	5.0423	0.4674	5.5097
	229.95	56.32	3.16	173.63	59.4771			
	173.63	57.09	2.39	116.54	59.4771			
	116.54	57.87	1.60	58.67	59.4771			
	58.67	58.67	0.81	-	59.4771			
10	229.95	229.95	7.96	-	237.9083	5.3253	0.1843	5.5097

