



Registrar

# National Electric Power Regulatory Authority Islamic Republic of Pakistan

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No. NEPRA/R/ADG(TRF)/TRF-503/KHP-2019/40341-40343

November 11, 2021

**Subject: Decision of the Authority in the matter of Motion for Leave for Review filed by Pakhtunkhwa Energy Development Organization (PEDO) for 11.8 MW Karora Hydropower Project (Case No. NEPRA/TRF-503/KHP-2019)**


Dear Sir,

Please find enclosed herewith the subject Decision of the Authority along with Annex-I & II (14 Pages) in Case No. NEPRA/TRF-503/KHP-2019.

2. The Decision 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.

3. The Order along with Reference Tariff Table (Annex-I) and Debt Servicing Schedule (Local) (Annex-II) of the Authority's Decision are to be notified in the official Gazette.

Enclosure: As above



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( Syed Safeer Hussain )

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

CC:

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

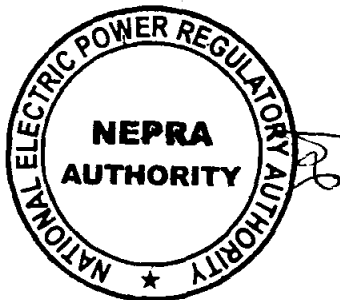
**DECISION OF THE AUTHORITY IN THE MATTER OF MOTION FOR LEAVE FOR REVIEW FILED BY PAKHTUNKHWA ENERGY DEVELOPMENT ORGANIZATION (PEDO) FOR 11.8 MW KARORA HYDROPOWER PROJECT.**

1. Pakhtunkhwa Energy Development Organization (hereinafter referred to as the "Petitioner" or PEDO), vide its letter dated March 17, 2021, filed a motion for leave for review (hereinafter referred to as "Review Motion"), seeking review of the determination of National Electric Power Regulatory Authority (hereinafter referred to as "the Authority") dated February 08, 2021, in the matter of determination of tariff for 11.8 MW Karora hydropower project (hereinafter referred to as "impugned determination").
2. The Review Motion was considered and admitted on April 06, 2021, for further proceedings. It was also decided to provide an opportunity of hearing to the parties to the proceedings; accordingly, the hearing in this regard was held on May 25, 2021, at 11:30 AM through online application zoom for which letters of invitation were sent for seeking comments. The hearing was attended by the Petitioner, CPPA-G, and other stakeholders.
3. **Grounds of Review Motion:** The Petitioner requested for the review of the following parameters in the review motion;
  - i. Benchmark Energy
  - ii. Management Consultancy (MC) Cost
  - iii. Project Management Unit (PMU) Cost
  - iv. Terms & Conditions of Debt
  - v. O&M Cost
  - vi. Return on Equity (ROE)
4. The submissions of the Petitioner are as follows:
  - i. **Benchmark Energy:** In the original tariff petition, an installed capacity of 11.80 MW was submitted for Karora HPP, and based on 2% auxiliary, the net available MWs are 11.564 MW. As the Project is based on Take & Pay basis and there are no allowed outages under Take & Pay mechanism, the tariff must be calculated based on 328.5 days operation per annum instead of 365 days. The energy quantum for the tariff calculations should be calculated according to the following parameters:

Plant Capacity	11.80 MW
Auxiliary Consumption	0.5%
Operational Days	328.5
Saleable Energy	63.92 GWh



- ii. **Management Consultancy (MC) Cost:** In the tariff petition, an amount of Rs. 106.16 million inclusive of a provisional sum of Rs. 14 million was requested. The Authority has approved an amount of Rs. 86 million against the claimed Rs 106.16 million after excluding an amount of Rs 14 million and Rs 6.7 million on account of provisional sum and remunerations of foreigners respectively. In this regard, it is worth mentioning that the cost of a foreign expert of Rs. 6.7 million is a part of the approved cost obtained through competitive bidding under PEC rules and cannot be unilaterally subtracted from the contract value, however, the deduction of Rs. 14 million on account of a provisional sum is understood, but due to delays, this cost has also been used. Hence the cost of MC after the deduction of a provisional sum is Rs. 92.718 million instead of Rs.86 million as determined by the Authority. In addition, the cost of service for Independent Engineer (IE) for six months was requested in the original petition, however the same has not been allowed by the Authority. It is pertinent to mention that the services of IE are mandatory under the standard PPA, therefore the amount of Rs. 14.40 million (USD 90,000) should be approved. Hence the cost of Rs 107.718 million (after exclusion of a provisional sum) should be approved.
- iii. **Project Management Unit (PMU) Cost:** The PMU cost covers the project establishment for the preconstruction as well as employer's cost during construction and accordingly an amount of USD 0.642 million was claimed under this head. However, the Authority in the impugned determination approved an amount of USD 0.22 million based on the assessment of the previous projects. The claimed cost in the original petition is well justified for a project having a construction period of 50 months and the same was also duly approved by the competent authority i.e., the Ministry of Finance and other offices of the provincial government. Therefore, the same should be allowed.
- iv. **Terms & Conditions of Debt:** In the original petition, KIBOR of 8% plus a spread of 2.5% with a loan repayment period of 10 years was proposed, whereas, the Authority in the impugned determination approved only KIBOR without any spread by amortizing the loan over 30 years. The amortization of loan over 30 years is accepted, however, the spread of 2.5% over KIBOR should be allowed which is also consistent with Authority's tariff benchmarks 2018.
- v. **O&M Cost:** The O&M cost @ 2% of CAPEX (minus IDC) per annum should be allowed. The Authority has allowed an O&M cost @ 1% of CAPEX per annum. The original O&M estimates were based at 2.3% of Capex minus IDC but we proposed O&M cost at @ 2% of CAPEX per annum minus, Therefore, our original O&M claims at 2% of CAPEX should be reconsidered.
- vi. **Return on Equity (ROE):** PEDO develop the project based on a 16% return per annum. However, NEPRA has allowed only 10%. When the project was developed even NEPRA was allowing up to 20% ROE for Hydropower projects (under upfront tariff). So, allowing 10% ROE will compress the feasibility of the project and loss to the province. The Authority is requested to allow 16% RoE



5. Submissions of the Stakeholders and response of the Petitioner are as follows:

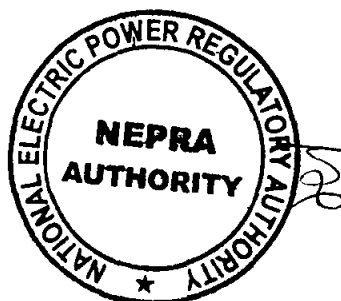
- i. **Benchmark Energy:** CPPA-G vide letter dated June 01, 2021, submitted that the concept of allowance for scheduled outage/forced outage came in those tariffs where the tariff is calculated on the availability of the Complex because the tariff cannot be calculated on 100% availability. Even in the Power Purchase Agreement (PPA), where a two-part tariff is allowed by the Authority, the concept of low hydrology is there. While referring to section 6.3 (h) of the PPA of 84 MW Laraib and section 6.3 (f) of the PPA of 81 MW Malakand-III hydropower CPPA-G recommended that plants have to be maintained in such a manner that during the high flow period maximum output shall be ensured to achieve benchmark energy and this benchmark has been calculated in the feasibility study of individual projects from where data of the plants have been taken by the Authority. During the low period, the necessary maintenance can be performed on the Units of the Complex. CPPA-G stated that although, the Authority has considered the same method of calculation of benchmark energy in the tariff determination of M/s Rialli-II Hydropower (Pvt.) Limited and M/s Kathai-II Hydropower (Pvt.) Limited and CPPA-G agreed with the stance of the Authority on the calculation of saleable energy.

In response to the CPPA-G letter, PEDO vide letter dated June 23, 2021, submitted that CPPA-G has commented that outage hours should not be subtracted while calculating benchmark energy. PEDO cited the paragraph of PPA of Laraib Energy Limited wherein it has been stated that *"Laraib is based on two-part payments and hence receives payments even during allowed outage hours. In addition, as per the paragraph quoted by CPPA-G Laraib enjoys leverage of possibility of conducting scheduled outages during low flow seasons and that period not being counted toward outage allowance"*. As per PEDO, in the case of Karora project, it receives payment only for the energy sold and thus there is no period for scheduled and or forced outage in the EPA. Therefore, benchmark energy must be calculated only for the period during which the Project generates electricity.

- ii. **Terms & Conditions of Debt:** CPPA-G submitted that the Authority allowed cost of debt at 6 months KIBOR (that is 7.3%) without any spread which shall be adjusted biannually with any variation in KIBOR. Since the Project is financed by the Hydel Development Fund and not from any financial institution, it is, therefore, requested that the spread claimed by the PEDO seems to be irrational which only covers the banking costs between lending and borrowing. In light of the above, CPPA-G endorsed the Authority's decision in this regard.

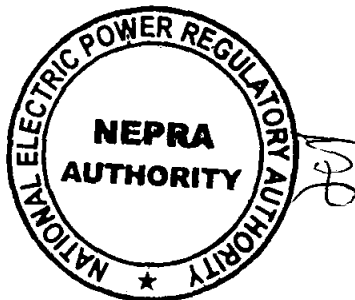
In response to the above CPPA-G's comments, PEDO stated that as per the NEPRA's Tariff Benchmark decision dated 2018, it is clearly stated that for projects securing financing through Non—banking resources, spread shall be allowed as per Authority decision (but not zero). Hence, PEDO requested NEPRA for a spread of 2.5% over KIBOR.

- iii. **Return on Equity (ROE):** CPPA-G stated that NEPRA allowed a return of 10% for the Project in line with WAPDA Hydro projects with no USD indexation. Furthermore, the Neelum Jhelum hydropower project also claimed Return on Equity of 10% in its tariff submission before NEPRA. Thus CPPA-G endorsed the Authority's decision in this regard.



In response to CPPA-G comments, PEDO submitted that Neelum Jhelum's equity has been raised through the imposition of NJ-surcharge in consumer's bill as a burden on consumers. According to PEDO, NJ does not qualify for any ROE as the funds have not been raised by WAPDA. In the case of Karora HPP, entire funding including equity has been raised from PEDO's own resources and thus it requested to allow a return of 16% p.a.

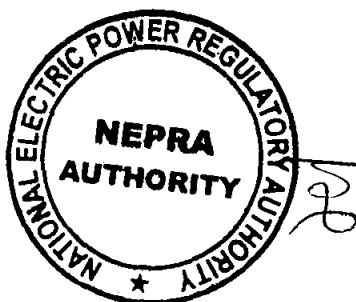
6. Arguments heard and record perused.
7. As per regulation 3(2) of the National Electric Power Regulatory Authority (Review Procedure) Regulations, 2009, "any party who is aggrieved from any order of the Authority and who, from the discovery of new and important matter of evidence or on account of some mistake or error apparent on the face of the record or from any other sufficient reasons, may file a motion seeking review of such order".
8. In the instance case, it is observed that the majority of the submissions made in the Review Motion were already deliberated upon in the impugned determination. The Authority is of the view that only the following grounds merit consideration and certain clarifications:-
  - i. Terms & Conditions of Debt
  - ii. Project Management Unit (PMU) Cost
  - iii. Return on Equity (ROE)
9. **Terms and conditions of the Debt:** The cost of financing was allowed to the Petitioner keeping in view the submission made to the Authority during the proceeding of the impugned determination where it has been stated that the funds secured were from Hydel Development Fund (HDF). Similarly, in the instant Review Motion, nothing has been placed before the Authority as a record that would otherwise refute that understanding regarding the sources of funds for the Project. Therefore, the Authority maintains its earlier decision in the matter. However, if PEDO establishes that sources of financing for the Project is other than HDF, the Authority may review the matter at the time of COD tariff adjustment upon the submission of authentic documentary evidence to the satisfaction of the Authority.
10. **Project Management Unit (PMU) Cost:** The Authority while assessing this cost relied upon the benchmarked costs approved for other comparable hydropower projects being set up under the Asian Development Bank's Renewable Energy Development Sector Investment Program (herein referred to as REDSIP) like Marala 7.64 MW, and Chianwali 5.4 MW, etc. The same cost was also approved for PEDO's Daral Khawar 36.6 MW hydropower project. This indicates that the benchmark cost is reasonable, however keeping in view that since the Project is still under the construction stage and PMU is still functionary, the Authority may review the prudently incurred cost (not exceeding the amount requested i.e. Rs 102.75 million) at the time of COD tariff adjustment upon the submission of the authentic documentary evidence to the satisfaction of the Authority. In view thereof, the Authority has decided to maintain its earlier decision in this regard.



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11. **Return on Equity:** The Authority carefully reviewed the submission of the Petitioner and commentator in this regard and is of the opinion that investments in hydropower projects carries risk and accordingly a reasonable return should be allowed. The Authority also noted that recently local currency long-term bonds are offering interest which is slightly higher than the RoE of 10% allowed to the Project. It was observed that the Government of Khyber Pakhtunkhwa should have incentives to invest in developing local hydro resources than making an investment in long-term bonds whose returns have recently increased. Given the above, the Authority has decided to enhance the return from 10% to 13% for the Project without any USD indexation.
12. **Pre-COD sale:** The Authority also noted that going forward, clarity should be given with regards to the Pre-COD sale. It was noted that in the impugned determination, Pre-CoD was subject to the terms and conditions of EPA but the applicable tariff component included O&M (fixed & variable) and insurance. To bring further clarity and consistency with the standard PPA which is also prevalent in other hydro tariff determinations the Authority has decided to allow Pre-CoD sale to the extent of component of variable O&M only as payment of Water Use Charge is not relevant in the instant case.
13. **Order:** In pursuance of section 7(3)(a) of the Regulation of Generation, Transmission, and Distribution of Electric Power Act, 1997 read with NEPRA (Tariff Standards & Procedure) Rules, 1998, the Authority hereby determines and approves the following generation tariff along with the terms and conditions for Karora Hydropower Project of Pakhtunkhwa Energy Development Organization (the petitioner) for delivery of electricity to Power Purchaser:
- i) Levelized tariff works out to be Rs. 7.7817 per kWh (US Cents 4.8635 per kWh)
  - ii) EPC cost of US\$ 25.53 million has been approved.
  - iii) Non-EPC cost amounting to Rs. 121.32 million includes Management Consultancy cost of Rs. 86.12 million and Project Management Unit cost of Rs. 35.2 million has been approved.
  - iv) Land and Resettlement cost of Rs. 61.44 Million (US\$ 0.384 Million) has been assumed for calculation.
  - v) Debt to Equity ratio of 80:20 has been approved.
  - vi) Debt repayment period of 30 years has been taken into account for 100% local loan.
  - vii) The KIBOR rate of 7.30% as of September 30, 2020, has been taken into account while calculating the cost of debt.
  - viii) Annual ROE & ROEDC at 13% has been approved.



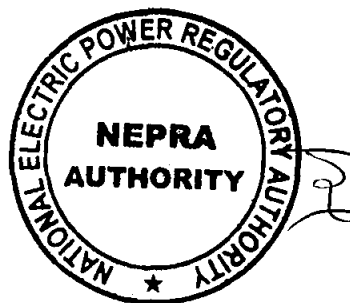
- ix) The reference tariff has been calculated on the basis of net annual benchmark energy generation of 71.0290 GWh for an installed capacity of 11.80 MW. An auxiliary consumption has been restricted to 0.5%.
- x) The above charges will be limited to the extent of net annual energy generation of 71.0290 GWh. Net annual generation supplied during a year to the Power Purchaser in excess of benchmark energy of 71.0290 GWh will be charged at 10% of the prevalent approved tariff.
- xi) O&M cost of US\$ 472,000 per annum has been approved.
- xii) Insurance during the operation has been calculated as 0.75% of the EPC cost.
- xiii) The reference US\$/PKR rate has been taken as 160.
- xiv) The construction period of 30 months has been approved and the same is used for the workings of ROEDC and IDC.
- xv) IDC and ROEDC have been worked out using the following drawdown schedule:

Period (Months)	Draw Down (%)
06	20
12	15
18	20
24	20
30	25

- xvi) In the above tariff, no adjustment for carbon emission reduction receipts has been accounted for. However, upon actual realization of carbon emission reduction receipts, the same shall be distributed between the Power Purchaser and the petitioner in accordance with the approved mechanism given in the applicable government policy.
- xvii) The above tariff is applicable for a period of thirty years commencing from the commercial operations date (COD).
- xviii) The tariff is based on Take & Pay, with must-run provision, accordingly, a single part tariff has been allowed to the Project
- xix) The component-wise tariff is indicated as Annex-I.
- xx) The debt Servicing Schedule is attached as Annex-II.

**I. One Time Adjustments**

The following onetime adjustments shall apply to the reference tariff:



- a. The EPC cost shall be verified and adjusted at actual considering the approved amount as the maximum limit. Applicable foreign portion of the EPC cost will be adjusted at COD on account of variation in PKR/USD parity during the construction period, on the production of authentic documentary evidence by the petitioner to the satisfaction of the Authority. The adjustment in applicable portion of the approved EPC cost shall be made only for the currency fluctuation against the reference parity values. The local portion of the EPC contract will not be subject to any exchange rate variation and the allowed PKR amount shall be actualized. The lower of actual or approved shall be taken into account at COD.
- b. The local portion of Civil Works cost only will be adjusted on account of variation in the price of construction material (Cement, Steel, Labour, and Fuel) during the project construction period as per the following mechanism/formula:

$$P_n = 0.51 + 0.10 * (C_n/C_o) + 0.09 * (S_n/S_o) + 0.15 * (F_n/F_o) + 0.15(L_n/L_o)$$

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;

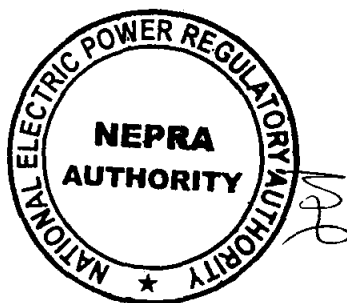
$S_n$  is the index value for the relevant month for Steel Bar & Sheets as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

$F_n$  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) 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 on June 2014 which is one month prior to the EPC bid submission deadline.

- c. Any liquidated damages, penalties, etc. (by whatever name called), actually recoverable by the petitioner from the EPC contractor(s), pertaining to the construction period allowed by the Authority, will be adjusted in the project cost at COD.
- d. Land and Resettlement costs will be allowed as per actual, at the time of COD upto to a maximum of Rs. 61.44 Million (US\$ 0.384 Million) allowed now, upon production of verifiable documentary evidence. The initial schedule of rates and variations in them shall be certified by the Provincial government and approved by NEPRA.



- e. If no insurance cost has been incurred during the operation phase of the power plant, the assumed calculated tariff component shall be excluded from the tariff components at the COD stage.
- f. 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).
- g. The return on equity (including return on equity during construction) will be adjusted at COD on the basis of actual equity injections (within the overall equity allowed by the Authority at COD), during the project construction period allowed by the Authority.
- h. The reference tariff table shall be revised at COD while taking into account the above adjustments. The petitioner shall submit its request to the Authority within 90 days of COD for necessary adjustments in tariff at COD.

## II. Indexations:

The following indexation shall be applicable to the reference tariff:

### i) Indexation applicable to O&M

The local part of O&M cost will be adjusted on account of local inflation and the O&M foreign component will be adjusted on account of variation in dollar/rupee exchange rate and US CPI. Quarterly adjustments for inflation and exchange rate variation will be made on 1<sup>st</sup> July, 1<sup>st</sup> October, 1<sup>st</sup> January, and 1<sup>st</sup> April respectively on the basis of the latest available information with respect to CPI - General (notified by the Pakistan 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 indexations will be as follows:

$$F O\&M_{(LREV)} = F O\&M_{(LREF)} * CPI_{(REV)} / CPI_{(REF)}$$

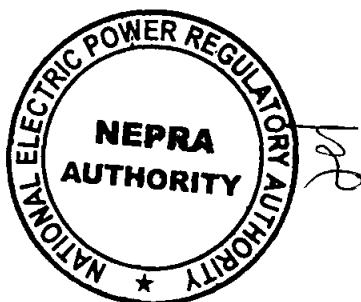
$$F O\&M_{(FREX)} = F O\&M_{(FREX)} * US CPI_{(REV)} / US CPI_{(REF)} * ER_{(REV)} / ER_{(REF)}$$

$$V O \& M_{(LREV)} = V O\&M_{(LREF)} * CPI_{(REV)} / CPI_{(REF)}$$

Where;

$F O\&M_{(LREV)}$  = The revised applicable fixed O&M local component of tariff

$F O\&M_{(FREX)}$  = The revised applicable fixed O&M foreign component of tariff



$V O\&M_{(LREV)}$	= The revised applicable variable O&M local component of tariff
$FO\&M_{(LREF)}$	= The reference fixed O&M local component of tariff for the relevant period
$FO\&M_{(FREF)}$	= The reference fixed O&M foreign component of tariff for the relevant period
$VO\&M_{(LREF)}$	= The reference variable O&M local component of tariff for the relevant period
$CPI_{(REV)}$	= The revised Consumer Price Index (General) as notified by the Pakistan Bureau of Statistics
$CPI_{(REF)}$	= 138.32 Consumer Price Index (N-CPI) of September 2020 notified by the Pakistan Bureau of Statistics
$US\ CPI_{(REV)}$	= The revised US CPI (all urban consumers)
$US\ CPI_{(REF)}$	= 260.280 US CPI (all urban consumers) for the month of September 2020 as notified by the US Bureau of Labor Statistics
$ER_{(REV)}$	= 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 - Current reference 160.

ii) Adjustment of the insurance component

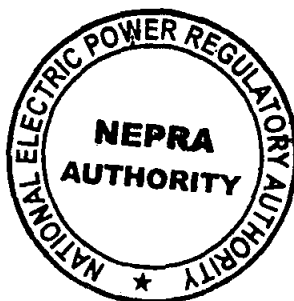
The insurance component of the reference tariff will be adjusted as per actually incurred prudent costs, subject to the maximum ceiling of 1% of the approved EPC cost, on annual basis upon production of authentic documentary evidence by the petitioner.

iii) Adjustment for KIBOR variation

The interest part of the debt service component will remain unchanged throughout the term except for the adjustment due to variation in 6 months KIBOR, according to the following formula:

$$\Delta I = P_{(REV)} * (KIBOR_{(REV)} - 7.30\%) / 2$$

Where:



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- $\Delta I$  = the variation in interest charges applicable corresponding to variation in 6 months KIBOR.  $\Delta I$  can be positive or negative depending upon whether 6 months KIBOR<sub>(Rev)</sub> per annum > or < 7.30%. The interest payment obligation will be enhanced or reduced to the extent of  $\Delta I$  for each half year under adjustment.
- $P_{(REV)}$  = is the outstanding principal (as indicated in the attached debt service schedule to this order at Annex-II) on a bi-annual basis at the date of the relevant calculation.

### III. 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 plants and equipment shall be new.

#### Emissions Trading/ Carbon Credits:

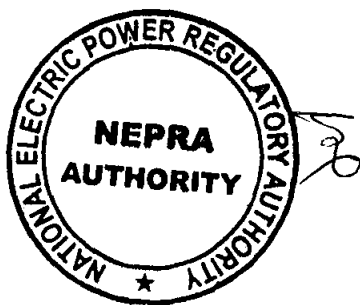
The Petitioner shall process and obtain emissions/carbon credits expeditiously and credit the proceeds to the Power Purchaser as per the applicable government policy and the terms and conditions agreed between the Petitioner and the Power Purchaser.

#### Power Curve of the Hydel Power Complex:

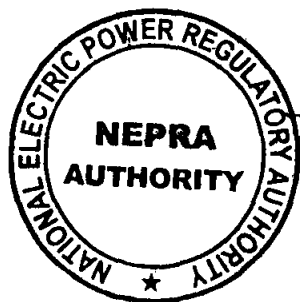
The power curve of the Hydel Power plant shall be verified by the Power Purchaser, as part of the Commissioning tests according to the latest IEC standards and shall be used to measure the performance of the hydel generating units.

#### Others:

- i. The Authority has allowed/approved only those cost(s), terms term(s), condition(s), provision(s), etc. which have been specifically approved in this tariff determination. Any cost(s), term(s), condition(s), provision(s), etc. contained in the tariff petition or any other document which are not specifically allowed/approved in this tariff determination, should not be implied to be approved, if not adjudicated upon in this tariff determination.
- ii. The above tariff and terms and conditions shall be incorporated as the specified tariff approved by the Authority pursuant to Rule 6 of the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000 in the power purchase agreement between the Petitioner and the Power Purchaser. General assumptions, which are not covered in this determination, may be dealt with as per the standard terms of the EPA.



- iii. In case the PEDO wants to exit and sell the energy from Karora HPP to the buyer(s) other than the national grid/CPPA-G/DISCOs then the terms of such arrangement shall be mutually agreed between parties to the EPA and, reflected in the draft EPA and submitted before the approval of the Authority .
- iv. In case the company earns annual profit in excess of the approved return on equity (including ROEDC), then that extra amount shall be shared between the power producer and consumers through a clawback mechanism to be decided by the Authority at the time of COD tariff adjustment.
- v. Pre COD sale of electricity is allowed to the project company, subject to the terms and conditions of EPA, at the applicable tariff only including variable O&M component. However, pre-COD sales will not alter the required commercial operations date stipulated by the EPA in any manner.
- vi. In case the company is obligated to pay any tax on its income from generation of electricity, or any duties and/or taxes, not being of refundable nature, are imposed on the company, the exact amount paid by the company on these accounts shall be reimbursed on production of original receipts. This payment shall be considered as a pass-through payment. However, withholding tax on dividends shall not be a pass-through item.
- vii. Hydrological Risk shall be borne by the Power Producer.



14. The order along with the reference tariff table attached as Annex-I and debt servicing schedule attached as Annex-II thereto are recommended for notification by the Federal Government in the official gazette in accordance with Section 31(7) of the Regulation of Generation, Transmission, and Distribution of Electric Power Act, 1997.

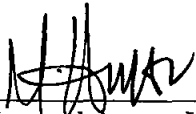
**AUTHORITY**



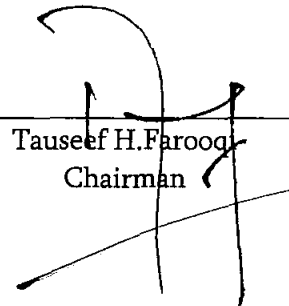
Rehmatullah Baloch  
Member



Rafique Ahmed Shah  
Member

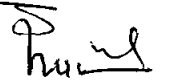


Engr. Maqsood Anwar Khan  
Member



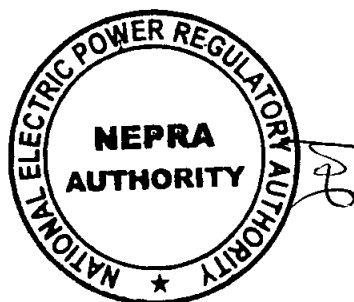
Tauseef H. Farooq  
Chairman



  
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**KARORA HYDROPOWER PROJECT  
REFERENCE TARIFF TABLE**

Year	V.O&M Local	Fixed O&M Foreign	Fixed O&M Local	Insurance	ROEDC	ROE	Debt Servicing		Total PKR/Kwh
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Principal	Interest	
1	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	0.5116	3.8060	7.7817
2	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	0.5496	3.7679	7.7817
3	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	0.5905	3.7271	7.7817
4	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	0.6344	3.6832	7.7817
5	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	0.6815	3.6360	7.7817
6	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	0.7322	3.5854	7.7817
7	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	0.7866	3.5310	7.7817
8	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	0.8451	3.4725	7.7817
9	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	0.9079	3.4097	7.7817
10	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	0.9754	3.3422	7.7817
11	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	1.0479	3.2697	7.7817
12	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	1.1258	3.1918	7.7817
13	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	1.2095	3.1081	7.7817
14	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	1.2994	3.0182	7.7817
15	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	1.3960	2.9216	7.7817
16	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	1.4997	2.8178	7.7817
17	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	1.6112	2.7064	7.7817
18	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	1.7310	2.5866	7.7817
19	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	1.8597	2.4579	7.7817
20	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	1.9979	2.3197	7.7817
21	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	2.1464	2.1712	7.7817
22	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	2.3059	2.0116	7.7817
23	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	2.4773	1.8402	7.7817
24	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	2.6615	1.6561	7.7817
25	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	2.8593	1.4583	7.7817
26	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	3.0719	1.2457	7.7817
27	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	3.3002	1.0174	7.7817
28	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	3.5455	0.7721	7.7817
29	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	3.8091	0.5085	7.7817
30	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	4.0922	0.2254	7.7817
Levelized Tariff	0.1063	0.5741	0.3828	0.4313	0.3645	1.6050	1.0731	3.2445	7.7817





Period	Opening Balance Rs.	Mark-UP Rs.	Principal Repayment	Debt Service	Annual Principal Repayment Rs./KWh	Annual Interest Rs./KWh	Annual Servicing Rs./KWh
1	3,712,139,903	3,694,206,059	134,841,806,14	18,493,145	153,336,951	0.5116	3,8060
2	3,675,900,913	3,656,630,695	133,467,020,38	19,869,931	153,336,951	0.5496	3,7679
3	3,636,760,765	3,616,165,581	131,274,761,90	20,593,183	153,336,951	0.5905	3,7271
4	3,594,818,673	3,574,818,673	129,566,201,03	21,346,908	153,336,951	0.6344	3,6832
5	3,549,758,932	3,529,988,182	127,852,432,73	22,126,070	153,336,951	0.6815	3,6360
6	3,499,342,307	3,479,342,307	126,140,809,58	22,913,771	153,336,951	0.7322	3,5854
7	3,449,342,307	3,429,342,307	124,428,140,80	23,707,576	153,336,951	0.7866	3,5310
8	3,393,442,463	3,373,442,463	122,715,471,77	24,501,371	153,336,951	0.8451	3,4725
9	3,333,442,463	3,313,442,463	121,002,802,84	25,295,166	153,336,951	0.9079	3,4097
10	3,268,954,040	3,248,954,040	119,289,833,91	26,089,961	153,336,951	0.9754	3,3422
11	3,199,672,048	3,179,672,048	117,576,865,08	26,884,756	153,336,951	1.0479	3,2697
12	3,125,275,601	3,105,275,601	115,863,897,15	27,679,551	153,336,951	1.1258	3,1918
13	3,045,275,601	3,025,275,601	114,150,928,22	28,474,346	153,336,951	1.2095	3,1081
14	2,959,367,087	2,939,367,087	112,437,959,29	29,269,141	153,336,951	1.2994	3,0182
15	2,867,072,800	2,847,072,800	110,725,000,36	30,064,936	153,336,951	1.3960	2,9216
16	2,767,918,071	2,747,918,071	109,012,041,43	30,860,731	153,336,951	1.4997	2,8178
17	2,661,929,947	2,641,929,947	107,299,082,50	31,656,526	153,336,951	1.6112	2,7064
18	2,546,949,572	2,526,949,572	105,586,123,57	32,452,321	153,336,951	1.7310	2,5866
19	2,423,999,363	2,403,999,363	103,873,164,64	33,248,116	153,336,951	1.8597	2,4579
20	2,291,909,988	2,271,909,988	102,160,205,71	34,043,911	153,336,951	1.9979	2,3197
21	2,150,002,113	2,130,002,113	100,447,246,78	34,839,706	153,336,951	2.1464	2,1712
22	1,997,543,906	1,977,543,906	98,732,287,85	35,635,501	153,336,951	2.3059	2,0116
23	1,833,757,286	1,813,757,286	97,019,328,92	36,431,296	153,336,951	2.4773	1,8402
24	1,657,793,890	1,637,793,890	95,306,369,99	37,227,091	153,336,951	2.6615	1,6561
25	1,468,750,739	1,448,750,739	93,591,401,06	38,022,886	153,336,951	2.8593	1,4583
26	1,265,655,584	1,245,655,584	91,876,432,13	38,818,681	153,336,951	3.0719	1,2457
27	1,047,463,910	1,027,463,910	90,161,463,20	39,614,476	153,336,951	3.3002	1,0174
28	813,053,558	793,053,558	88,446,494,27	40,410,271	153,336,951	3.5455	0.7721
29	561,218,957	541,218,957	86,731,525,34	41,206,066	153,336,951	3.8091	0.5085
30	290,664,924	270,664,924	85,016,556,41	42,001,861	153,336,951	4.0922	0.2254