



Registrar

National Electric Power Regulatory Authority
Islamic Republic of Pakistan

NEPRA Tower, Attaturk Avenue (East), G-5/1, Islamabad
Ph: +92-51-9206500, Fax: +92-51-2600026
Web: www.nepa.org.pk, E-mail: registrar@nepa.org.pk

No. NEPRA/TRF-399/PEDO(DKHP)-2017/346-348

January 9, 2018

Subject: Determination of the Authority in the matter of Tariff Petition filed by Pakhtunkhwa Energy Development Organization for Determination of EPC Stage Generation Tariff for 36.6 MW Daral Khawar Hydropower Project located in District Sawat, Malakand Division, Khyber Pakhtunkhwa [Case No. NEPRA/TRF-399/PEDO(DKHP)-2017]

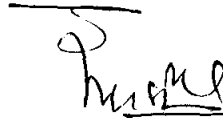
Dear Sir,

Please find enclosed herewith the subject Determination of the Authority along with Annex-I, II-A & II-B (24 pages) in Case No. NEPRA/TRF-399/PEDO(DKHP)-2017.

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

3. Order of the Authority's Determination along with Reference Tariff Table (Annex-I) and Debt Servicing Schedule (Annex-II-A & II-B) needs to be notified in the official gazette.

Enclosure: As above


09 01 18
(Syed Safer Hussain)

Secretary
Ministry of Energy
'A' Block, Pak Secretariat
Islamabad

CC:

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

1 BACKGROUND

- 1.1 Daral Khwar Hydropower Project (herein referred to as the "Project") is a run of the river hydropower project of Pakhtunkhwa Energy Development Organization (herein referred to as "PEDO", or the "Petitioner"). It is located on the Daral Khwar Nullah, a right tributary of River Swat near Bahrain Town, in the District Swat of Malakand Division, Khyber Pakhtunkhwa. The Project is currently under construction and nearing its completion. It is expected to generate 36.6 MW with average annual energy production of 154 GWh.
- 1.2 PEDO filed a Petition for determination of EPC Stage generation tariff pursuant to Rule 3 of the National Electric Power Regulatory Authority (Tariff Standards and Procedures) Rules, 1998.

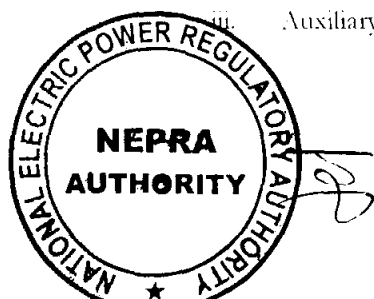
2 SUMMARY OF THE PETITION

- 2.1 The salient features of the Petition are given hereunder:

Cost Head	US\$ Million
EPC Contract/Construction	83.25
Land Cost	1.55
Development Cost/PEDO Head Office Charge	1.48
Financing Fee/Commitment Fee	2.49
Management Consultants Cost	2.25
Project Capital Cost without IDC	91.02
Interest During Construction (IDC)	11.55
Project Capital Cost	102.57
Debt Equity Ratio	80:20
Debt Financing	Local/Foreign
Base Rate	Local Hydel Development Fund@ 10.25%/6 Month LIBOR
Premium	For LIBOR 1.35%
Repayment Period	20 Years
Return on Equity (IRR based)	17%
Construction Period	30 months
Tariff Control Period	30 Years
Proposed Levelized Tariff (1-30 Years)	Rs. 11.5702/kWh (US cents 11.0515/kWh)
Proposed Tariff (1-20 Years)	Rs. 12.0700/kWh
Proposed Tariff (21-30 Years)	Rs. 5.1932/kWh
USD/PKR Exchange Rate	104.69

- 2.2 The Petition was based on the following assumptions:

- Annual Plant Factor - 48.00 %
- Installed Capacity - 36.6 MW.
- Auxiliary Consumption 0.366 MW.



- iv. Contract Capacity 36.23 MW.
- v. Construction period of 61 months.
- vi. Any withholding tax on dividends will be considered pass-through.
- vii. Hydrological Risk to be borne by Power Purchaser.
- viii. Return on Equity and Return on Equity during construction @ 17% per annum.
- ix. Water use charge of PKR 0.425/kWh payable to GoKPK. Any Increase in the rate in future to be applicable to the project tariff as well.
- x. Reference exchange rate (PKR/US\$) is taken PKR 87.5799 = 1 US\$ for EPC and for tariff calculations PKR 104.6935 = 1 US \$ and the tariff does not incorporate any inflation.
- xi. The tariff table shall be updated at COD in order to correct the tariff according to the prevailing CPI, WPI, KIBOR, LIBOR and exchange rates.
- xii. Actual equity investment profile will be used to update Return on Equity during Construction at the time of COD.
- xiii. Actual IDC using the actual spread will be used to update the capital cost at COD. Any assumptions on commitment fees, upfront fees, arranger costs and similar charges assumed in the funding plan including PRI etc. will be adjusted at financial close.
- xiv. Any change in applicable accounting standards which impact revenues, costs and equity IRR shall be reflected in tariff accordingly.

3 PROCEEDINGS:

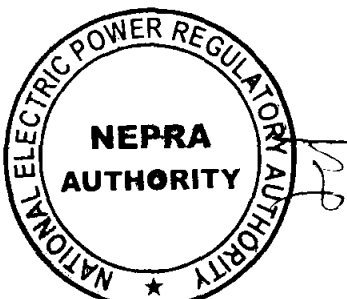
3.1 The Authority admitted the Petition of PEDO on June 20, 2017. Subsequently, on August 15, 2017 the Authority approved the list of issues framed for hearing and decided to hold hearing on the subject matter. In this regard advertisement in daily newspapers was published on August 25, 2017. Notices to stakeholders were served on August 29, 2017. No intervention request was filed by any party in response to the Authority's notice of admission and hearing. Comments/recommendation of the provincial government were also solicited on the subject matter in pursuance of the section 7(5) of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997. No comments were received from the provincial government.

3.2 The hearing on the subject matter was held on September 12, 2017, and was duly attended by the Petitioner. The Punjab Power Development Board (PPDB), Central Power Purchasing Agency (CPPA) and other stakeholders participated in the hearing as commentators. The PPDB also submitted written comments vide letter no. PPDB/1260/2017 dated September 13, 2017.

4 COMMENTS OF STAKEHOLDERS:

4.1 **Punjab Power Development Board (PPDB)**

4.2 The PPDB suggested that since the project is close to commissioning and only minor works are now pending, the Petitioner should have filed COD stage Tariff Petition instead of EPC stage Tariff Petition. Further, the PPDB expressed that the documentary evidence attached with Petition does not suggest that the indicated land cost is based on actual expense, however the same has been clarified during the hearing by PEDO that the claimed land expenditure is actual expenditure incurred for the project land acquisition. The PPDB added that the hydrological data of the project has been estimated after applying



Handwritten signature or mark.

statistical approach on data from nearby met station; however, it seems that no effort has been made to install proper gauges at the site to authenticate the hydrological data forming the basis of the plant design.

4.3 Central Power Purchasing Agency (CPPA)

4.4 The representative of CPPA informed during the hearing that PEDO had not yet approached CPPA for consent of purchase of power. The CPPA pointed out that in the past PEDO has been approaching CPPA for power purchase agreements of its plants only after achieving COD, whereas normally the negotiations for power purchase agreements begin before construction of projects.

4.5 Mr. Ashraf Rana

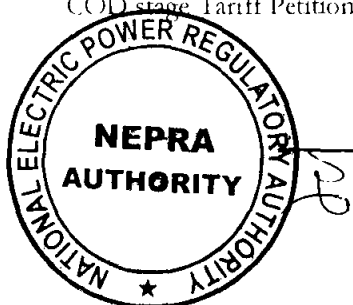
4.6 Mr. Ashraf Rana, commentator, submitted that the manner in which the project is being done is questionable and that NEPRA law does not allow execution of projects in this manner. He suggested that NEPRA should not keep on condoning the manner in which such projects are being executed only because they are owned by government entities like PEDO. He suggested that the parameters for public sector projects should be the same as parameters established for private sector projects. He suggested that 11 cents tariff for a 36MW high head hydropower project is too high and it is much higher than even the upfront tariff for small hydropower projects up to 25MW capacity. He suggested that the tariff seems very high especially after considering the fact that the project is being financed on very low government financing rates; and if, for comparison purpose, the project financing terms offered to private sector projects are applied to this project, the tariff would reach 13-14 cents which is exorbitantly high. He questioned whether this project will be allowed hydrological risk taking into account the fact that the project has a plant factor of 45%, whereas according to the terms of the upfront tariff for small hydropower projects, hydrological risk is not allowed to projects with plant factor lower than 50%. He suggested that NEPRA in its determination should clearly establish whether similar projects should be established under the private sector as well. He added that it may not make any sense for the economy if such a project becomes a precedent for future projects. Moreover, he suggested that the power purchaser in this case should be PESCO instead of CPPA because 132kV system falls under the control of distribution companies.

5 ISSUES

Based on the information that became available over the course of proceedings, the following issues were framed for deliberation:

5.1 Whether the construction of the project is complete, and whether the Petitioner should now file COD stage tariff petition based on actual costs incurred?

5.1.1 The Petitioner stated in its Petition that the time for completion of the project is June 2017, i.e. before the time of filing of the tariff petition. At the hearing, the Petitioner was asked to clarify about the date of completion of the project and whether it will be more suitable to directly determine COD stage tariff of the project based on actual costs incurred, instead of first determining the EPC stage tariff and then adjusting it at COD. The representative of PPDB suggested that since the project is close to commissioning and only minor works are now pending, the Petitioner should have filed COD stage Tariff Petition instead of EPC stage Tariff Petition.



Handwritten initials or signature.

Handwritten initials or signature.

5.1.2 The Petitioner submitted that the complex is expected to be completed for generation by December 2017 instead of June 2017 as indicated in the Petition, however, minor works will be completed till March 2018, and financial costs finalization will be completed at that time. Therefore COD level Tariff cannot be submitted at this stage. The Authority accepts the Petitioner's justification that it is not possible for PEDO to file COD stage petition without finalization of its cost.

5.2 Whether construction period of 61 months claimed by the Petitioner as against 36 months required under the EPC contract is justified?

5.2.1 The Petitioner submitted that the time for completion envisaged in the initial plan was 36 months. However because of flooding, harsh weather, law and order situation and other issues, the completion date was extended by 25 months to June 2017.

5.2.2 The Petitioner stated during the hearing that construction of the project started in June, 2012. The Petitioner further submitted that extension to the completion of project has already been awarded to the EPC Contractor, based on thorough evaluation by the Consultants/ Petitioner. According to the Petitioner the extension of Time was approved by CDWP/ ECNEC in revised PC-1 dated 3rd January 2017.

5.2.3 The PPDB vide its comments dated September 13, 2017, suggested that the Petition should have been based on tariff assumption on the original completion period (36 months), so that the end consumer is not overcharged/ penalized due to the delay in commissioning of the project.

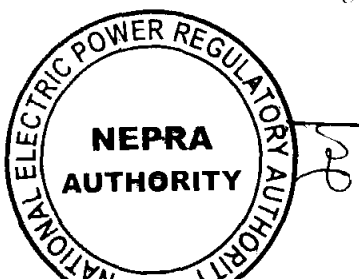
5.2.4 During the hearing the Authority showed its concern over the fact that, the Petitioner has submitted its EPC stage tariff Petition at such a belated stage, more than four (4) years after the start of construction in year 2012. Furthermore, the Authority questioned whether it would be prudent to allow financial impact of extension in the construction period of the project from 36 months to 61 months.

5.2.5 The Petitioner clarified during the hearing that the cost of financing of the project has been restricted to a construction period of 36 months starting from June, 2012. The impact of delay in construction on cost of capital has not been claimed in the Petition as ROEDC and IDC have been calculated for 36 months only rather than 61 months.

5.2.6 The Authority has observed that 61 months is an excessively long construction period for a 36 MW project. Further, the EPC contract between PEDO and SINOTEC-SHPE-GRC JV dated April 11, 2012 has been scrutinized. As per the EPC contract the time for completion for whole of the works of the project is 1095 days (i.e. approx. 36 months) and the same period was mentioned in the tender documents. The construction period of 36 months for calculation of ROEDC and IDC as claimed by the Petitioner is therefore justified, since the financial impact on cost of capital due to delay in construction of the project will not be passed on to the consumer in this manner. The Authority hereby allows construction period of 36 months for the Project.

5.3 Whether the EPC cost has been arrived at through fair and transparent EPC bidding process?

5.3.1 The Petitioner submitted that the EPC contract award was made through Competitive bidding and most stringent rules pertaining to award of such contracts were followed. The details regarding EPC

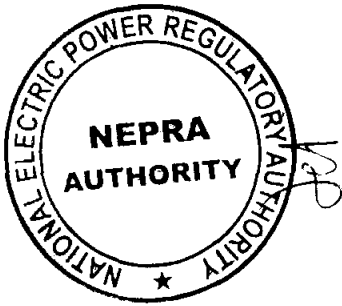


[Handwritten mark]

bid evaluation were submitted by PEDO through letter no. 540/PEDO/DKHP dated September 19, 2017.

5.3.2 According to the Petitioner the selection of EPC Contractor for design, Construction and procurement of the Project was made through International Competitive Bidding (ICB) process. PEDO invited tenders for EPC of Daral Khwar Hydropower Project through advertisement in the Local and National press on 2nd – 4th August 2011. The Bidding Documents were purchased by sixteen (16) number of firms. The names of the firms are given as under:

1. M/S Habib Rafique (Pvt.) Ltd. Lahore
2. M/S Al-Fajr International Islamabad
3. M/S Nasir Ullah Jan Inam Ullah Khan & Company (Pvt.) Ltd. Peshawar
4. Descon Engineering Limited Lahore
5. M/S Ghulam Rasool & Company (Pvt.)
6. M/S Habib Rafique (Pvt.) Ltd. Islamabad
7. M/S Khyber Grace (Pvt.) Limited Islamabad
8. M/S Ravi Global (Pvt.) Limited Lahore
9. M/S Etimaad Engineering (Pvt.) Ltd. Lahore
10. M/S PERC (Pvt) Ltd. Lahore
11. M/S Maamaar International (Pvt.) Ltd. Peshawar
12. SINOTEC-SHPE JV
13. Sarwar & Company Islamabad
14. TAG Engineering & Construction (Pvt.) Ltd.
15. SKB Joint Venture Lahore
16. ESER Contracting & Industry Co. Inc.



5.3.3 The closing date for submission of bids was extended from 31st October, 2011 to 21st December, 2011 by PEDO to ensure healthy competition. The receipt of Bids by PEDO was closed at 1430 hours, on 21st December, 2011 as scheduled. Out of Sixteen (16) firms which purchased the Bid Documents, the following two (02) bidders submitted the bids as Joint Ventures firms:

No.	Name of Joint Venture	Name of Partner Firms	Nationality
i)	SINOTEC SHPE GRC JV	SINOTECH (51%)	China
		SHPE (19%)	China
		GRC (30%)	Pakistan
ii)	ESER KHYBER GRACE JV	ESER (70%)	Turkey
		KHYBER GRACE (30%)	Pakistan

5.3.4 Bids opening was held as per schedule on 21st December, 2011, by the Bid Opening Committee in the presence of the representatives of bidders. The Bid Opening Committee was comprised of the following members:

1. Mr. Bahadur Shah - Managing Director, SHYDO (Convener)
2. Mr. Zahid Akhtar Sabri - Project Director, REDSIP (Member)
3. Mr. Aziz Khan Khattak - Director (A&F), SHYDO (Member)
4. Mr. Habib Khan - Project Manager, Daral Khwar HPP (Member)
5. Mr. Muhammad Shafi - Deputy Director, Daral Khwar HPP (Member)

5.3.5 The Bid Opening Committee opened envelopes of Technical Bids, examined and signed the documents. Sealed envelopes containing the Price Bids, were signed by all the members of the

Committee, to be opened after the Evaluation of Technical Bids, in presence of the Bidders. The Technical Evaluation Committee of SHYDO evaluated both the Technical Bids and found both the bidders, M/S SINOTEC-SHIPE-GRC JV and ESER-KHYBER GRACE JV, as responsive and recommended to invite their representatives to be present, at the time of opening of their Price Bids, at a date to be conveyed to the bidders. Accordingly, both the bidders were invited to attend the opening of the price bids on 21 January 2012.

5.3.6 The Price Bids were opened as per schedule on 21st January, 2012, by the Bid Opening Committee in the presence of the representatives of bidders. The Committee examined and signed the documents and announced the Bidder's name and Bid Prices.

5.3.7 The Authority observed that the Price bid evaluation was made on reference USD/PKR exchange rate of 87.5799, however, the reference USD/PKR exchange rate for this determination is 104.6935.

5.3.8 A summary of the bid prices based on reference USD/PKR rate of 104.6935 is given hereunder:

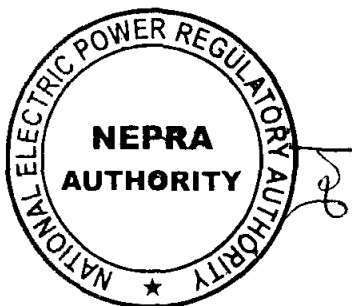
S No.	TITLE	SINOTEC JV	ESER JV
		Equiv. US\$ Total	Equiv. US\$ Total
1	Plant and Mandatory Spare Parts Supplied from Abroad	19.26	23.86
2	Plant and Mandatory Spare Parts Supplied from Within Employer's Country	0.00	1.00
3	Design Services	3.73	1.49
4	Civil Works, Installation and Other Services	53.20	71.77
	Total	76.19	98.11

5.3.9 The Bid of M/s SINOTEC-SHIPE-GRC JV was the lowest evaluated and substantially responsive Bid. Therefore, the Contract for Design, Procurement and Construction of Daral Khwar Hydropower Project (DKHP) was recommended to be awarded to M/s SINOTEC-SHIPE-GRC JV.

5.3.10 The Petitioner informed during the hearing that this was the second time the bidding was conducted for the project. According to PEDO, the first attempt for bidding of the project was unsuccessful due to the law and order situation in Swat, and response to invitation for EPC tenders was poor.

5.3.11 Mr. Ashraf Rana, commentator, suggested during the hearing that 11 cents tariff for this 36MW high head hydropower project is too high and it is much higher than even the upfront tariff for small hydropower projects up to 25MW capacity.

5.3.12 The Authority has observed that the price bid evaluation report dated February 2012 is fairly detailed as it is based on the FIDIC (International Federation of Consulting Engineers) procedure of bidding. The report suggests that bid prices were checked, evaluated and adjusted for arithmetic errors, exchange rate variations, time for completion, and various price adjustments for completeness of scope, technical compliance, commercial compliance and deviations in terms of payment and completion schedules. The lowest evaluated bid price of SINOTEC-SHIPE-GRC JV was considered reasonable although it was about 4.7% higher than the engineer's estimate.



HL

5.3.13 The EPC contract between PEDO and SINOTEC-SHPL-GRC JV dated April 11, 2012 has been scrutinized. Following is a summary of the EPC contract price:

S. No.	Title of EPC Component	EPC Contract Price		
		Foreign (US \$ Million)	Local (PKR Million)	Total (Equiv. US\$ Million)
1.	Plant and Mandatory Spare Parts Supplied from Abroad	18.0554	125.9543	19.2585
2.	Plant and Mandatory Spare Parts Supplied from Within the Employer's Country	0	0	0
3.	Design Services	2.5360	125.2738	3.7326
4.	Civil Works, Installation and Other Services	19.4506	3,533.1055	53.1977
TOTAL		40.0419	3,784.3335	76.1888

5.3.14 Overall, the Authority is satisfied with the EPC bid evaluation process. However, the Authority noted that EPC contract price includes provisional sum for "Price Adjustment" under the contract amounting to PKR 680 Million. The Authority has decided to exclude this amount from the EPC price as it will be finalized at the time of COD based on the price adjustment formula. Furthermore, the Petitioner did not specifically mention the price adjustment formula anywhere in its Petition; however, a general statement was made in the Petition that the agreed EPC cost shall be further adjusted for reopeners at the time of COD in accordance with the provisions of the signed Contract. Upon scrutiny, it has been observed that the formula for adjustment in EPC price is not entirely in line with the price adjustment formula approved for the upfront tariff as well as NEPRA's 3 stage mechanism for determination of tariff for hydropower projects. The Price Adjustment formula given in the EPC contract of the project stipulates that 40% of the contract price will be fixed whereas, an adjustment for variation in published statistics for labour and material cost will be applied on an abnormally large portion of the EPC price i.e. on the remaining 60% of the entire EPC price. Moreover, the adjustment formula is linked with Chinese indices which is not entirely in line with the 3-stage mechanism of NEPRA.

5.3.15 In comparison, the price adjustment formula approved for upfront tariff for small hydropower projects as well as the latest RFP approved for Taunsa hydropower project stipulates that the following price adjustment factor will be applied to only the local portion of Civil Works as shown hereunder:

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

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;



[Handwritten mark]

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;

Co, So, Fo and Lo 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.

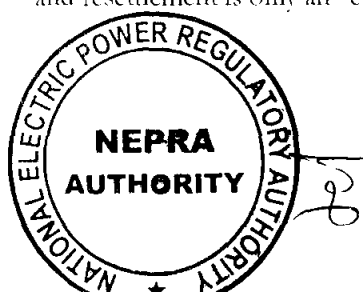
- 5.3.16 The Authority is of the opinion that the price adjustment formula of the upfront tariff is more well-defined and is in line with NEPRA's 3-stage mechanism, therefore, the same formula is hereby allowed to the Petitioner for one-time adjustment in EPC price instead of the formula mentioned in the EPC contract. Furthermore, the Authority hereby allows exchange rate fluctuation on admissible currencies for foreign portion of EPC price, as per practice for all other projects.
- 5.3.17 Moreover, the Authority has observed that the EPC contract stipulates that the rates and prices quoted by the Contractor in the Schedule of Prices shall be deemed to have included (i) business taxes, income tax, super tax, customs, import duties and other taxes on income, and (ii) fees charged for services provided under the Contract. Therefore, adjustment in EPC price for duties and taxes will not be required at COD.
- 5.3.18 The EPC contract price (excluding provisional sum for price adjustments) works out to be equivalent to US\$ 69.696 Million at the USD/PKR reference exchange rate of 104.69 as detailed under:

S No.	Title	EPC Price
1.	Foreign Component	US\$ 40.04419 Mil
2.	Local Component	PKR 3784.3335 Mil
3.	Less: provisional sum for price adjustments	- PKR 680.0000 Mil
Equiv. US\$ Total EPC Price		69.70 Mil
Equiv. PKR Total EPC Price		7,296.700 Mil

- 5.3.19 The Authority has observed that the per MW EPC cost of the project works out to be US\$ 1.904 Million/MW, which, contrary to the claim of commentator Mr. Ashraf Rana, is lower compared to the cost allowed under the upfront tariff, i.e. US\$ 2.409 Million/ MW. Further, the EPC price of the Project is inclusive of the cost of transmission line, whereas the upfront tariff assumptions exclude the cost of transmission line. The cost of 132 kV transmission line which will connect the project to the Madian Grid station is equivalent to US\$ 2.686 Million. The Authority hereby allows this cost to the Petitioner as part of EPC cost at this stage, subject to adjustment at COD as per actual cost borne by the Petitioner, if any, upon submission of documentary evidence duly endorsed by the Power Purchaser. Based on the aforementioned, the Authority hereby allows EPC price of US\$ 69.70 Million to the Petitioner.

5.4 Whether the Land acquisition and resettlement cost is still not firm and final, and whether the estimated cost of US\$ 1.55 million under this head is justified?

- 5.4.1 The Petitioner stated in its Petition that the claimed amount of US\$ 1.55 Million for land acquisition and resettlement is only an "estimate".



- 5.4.2 The Authority questioned the Petitioner that it is a peculiar circumstance, since land & resettlement cost and issues are dealt with in the early stages of development of hydropower projects so as to avoid hindrance in construction activities later on.
- 5.4.3 The Petitioner clarified that the actual Cost of Land 219 Canal and 13 Marla/ Compensation of non-fruit Trees is US\$ 1.55 Million. The cost of Land as per PC-01 was US\$ 1.545 Million, whereas actual cost of Land incurred through District Administration is US\$ 1.494 and crop compensation is US\$ 0.051 Million.
- 5.4.4 PPDB expressed during the hearing that the documentary evidence attached with the Petition does not suggest that the indicated land cost is based on actual expense, however the same has been clarified during the hearing by PEDO that the claimed land expenditure is actual expenditure incurred for the project land acquisition. The PPDB further vide its comments dated September 13, 2017 stated that the cost of land is required to be actualized by the relevant Revenue Authority and the amount of land in Acres is to be ascertained by the feasibility consultants. The estimated cost will require its adjustment at COD.
- 5.4.5 The Authority has observed that although the Petitioner has stated that the Land and resettlement cost is actual cost incurred for the project, no documentary evidence has been submitted for verification of the expenditure at this stage; therefore, the amount of US\$ 1.55 Million is allowed to the Petitioner subject to adjustment at COD based on verifiable documentary evidence.

5.5 Whether the other Non-EPC costs are justifiable?

5.5.1 The Petitioner claimed the following non-EPC costs:

S No.	Cost Head	US\$ Million
1.	Development Cost/ PEDO Head Office Charge	1.48
2.	Management Consultants Cost/ Hiring of PoEs, W.C.E, PPA	2.25
3.	Cost of Loan Arrangement/Financing Fee/Commitment Fee	2.49
	Total Non-EPC	6.22

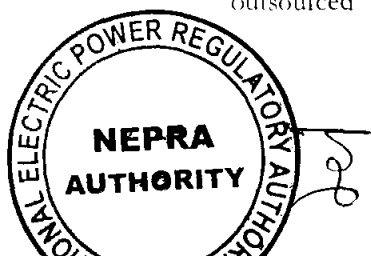
5.5.1.1 Development Cost

5.5.1.2 The Petitioner claimed Development Cost/ PEDO Head Office Charges of US\$ 1.48 Million. The Petitioner submitted that this cost comprises of all costs associated with employer's office expenses, PEDO Head Office Expenses during construction phase estimated @ 1%. Only a broad break-up of this cost was provided as under:

- Project Establishment US\$ 0.73 Million
- PEDO Head Office US\$ 0.75 Million

Total US\$ 1.48 Million

5.5.1.3 The Authority observed that the Petitioner has not provided much detail of its cost estimates under this head and it appears that the estimate is not based on detailed evaluation of project development cost. Therefore, previously established cost benchmarks need to be relied upon. The project development cost claimed by the Petitioner is high compared to previously established benchmarks for small hydropower projects executed in similar manner, i.e. EPC/Turnkey Contracts with outsourced Engineering and Administration of the project to Management Consultants. The



[Handwritten signature]

[Handwritten signature]

Authority has recently allowed a maximum development cost of US\$ 0.22 Million for provincial government hydropower projects in Punjab and KPK.

5.5.1.4 Based on the above, the Authority hereby allows Development cost of US\$ 0.22 Million for the Project.

5.5.1.5 **Management Consultants Cost/ Hiring of PoEs, W.C.E, PPA**

5.5.1.6 The Petitioner has claimed Management consultants cost of US\$ 2.25 Million. The Petitioner has submitted the following break-up of this cost:

S/N	Title	Million US\$
1.	Management Consultants Cost	2.21
2.	Hiring of PoEs, W.C.E, PPA	0.04
	Total	2.25

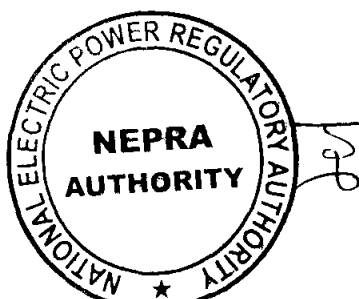
5.5.1.7 The Authority has observed that the contract of PEDO with its management consultants ACE (Pvt) Ltd dated April 30, 2008 states a contract price of EUR 49,261, USD 210,000 and PKR 114,103,435 (equivalent to US\$ 1.352 Million @ USD/PKR rate of 104.6935 and EUR/PKR rate of 110.73). The period agreed for services of the management consultants as per the original agreement was 60 months plus 12 months of defect liability. However, owing to the delay in construction of the project, PEDO has executed an amendment agreement with the management consultants for extension in services up to June 2017 at an additional cost of PKR 33,078,566 (equivalent to US\$ 0.316 Million).

5.5.1.8 The Authority has decided to disallow the additional management consultancy cost associated with delay in construction of the project amounting to US\$ 0.316 Million. Moreover, US\$ 0.04 Million claimed for Hiring of PoEs, W.C.E, PPA etc. pertain to project development and therefore, the same have been excluded from this head. The amount of US\$ 1.352 Million being the legitimate cost as per documentary evidence is hereby allowed as Management consultancy cost.

5.5.2 **Cost of Loan Arrangement/Financing Fee/Commitment Fee:**

5.5.3 Financial charges amounting to US\$ 2.12 Million were claimed by the Petitioner as part of the Project Cost @ 3.00% of the debt (excluding Interest during construction and financial charges) and Commitment Fee amounting to US\$ 0.36 Million have been claimed separately @ 0.50% of the Debt.

5.5.4 The Authority has observed that the loan agreement with ADB suggests that the lenders have imposed commitment charge @ 0.75% of outstanding amount of loan, whereas the documentary evidence provided by the Petitioner does not suggest anything about the financial charges or commitment fee on the local HDF loan which constitutes 99.4% of total loan. The Authority has allowed Commitment Charges as a part of Financial Charges in comparable cases with a maximum ceiling of 3% of the borrowing. Therefore for the purpose of tariff financial charges and commitment fees have been assumed as 3% of the foreign debt amount. A maximum cap of 3% of debt amount excluding financial charges is hereby allowed under this head subject to adjustment as per actual at COD.



5.6 A comparison of project cost claimed vs. allowed is given hereunder:

Cost Head	Claimed US\$ Million	Allowed US\$ Million
EPC Contract/Construction	83.25	69.696
Land Cost	1.55	1.550
Development Cost/PEIDO Head Office Charge	1.48	0.220
Financing Fee/Commitment Fee	2.49	0.012
Management Consultants Cost	2.25	1.352
Project Cost without IDC	91.02	72.830
Interest During Construction (IDC)	11.55	9.769
Total Project Cost	102.57	82.598

5.7 **Whether the Insurance Cost is reasonable?**

5.7.1 The Petitioner did not share any clear bases for calculation of the Insurance component of Tariff in the Petition. Further, the Petitioner requested for adjustment of Insurance during Construction at COD in the Petition.

5.7.2 During the hearing the Petitioner was questioned whether the structure of its EPC contract justifies Insurance During Construction cost to be allowed separately. The Petitioner submitted that the Insurance Cost is covered in EPC Contract, therefore, PEIDO has not incurred Insurance During Construction (IDC).

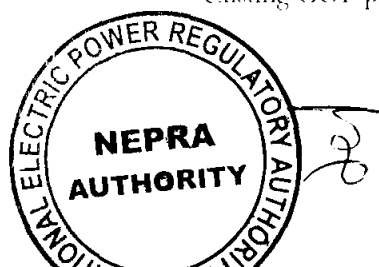
5.7.3 No details regarding the operational insurance have been provided by the Petitioner in its Petition. However, the insurance component in the tariff table provided by the Petitioner works out to be 1.35% of the EPC cost claimed.

5.7.4 The Authority has observed that the Insurance During Construction is covered under the EPC contract, and is the responsibility of the EPC contractor, therefore there is no justification to allow Insurance During Construction cost at this stage or its adjustment as per actual at COD stage.

5.7.5 Moreover, the operational insurance claimed by the Petitioner, is in line with operational insurance previously allowed to hydropower projects at 1.35% of EPC cost. However, based on the latest data of market conditions obtained by the Authority and the actual operational insurance of private hydropower projects, the Authority has decided that the operational insurance will be restricted at a maximum cap of 0.75% of EPC cost and will be subject to adjustment as per actual. The Petitioner before applying for COD adjustment shall have insurance cover for the plant as required under the PPA; otherwise, the Authority shall disallow this component until the plant is insured as required under the PPA.

5.8 **Whether indexation of foreign O&M with European and Chinese indices in addition to US CPI is justified? Whether variable and fixed O&M claimed by the Petitioner is justified?**

5.8.1 The Petitioner requested for indexation of its foreign O&M European and Chinese indices in addition to US CPI. The Authority has previously not allowed such indexations due to the fact that existing GOP policy only allows USD/PKR and US CPI indexations for foreign O&M.



[Handwritten signature]

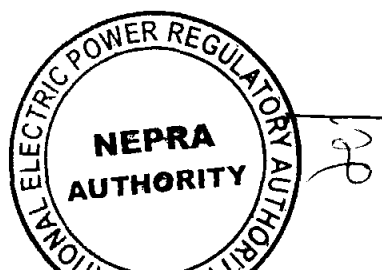
- 5.8.2 During the hearing the Petitioner submitted that its request for indexation of O&M based on European and Chinese indices in addition to US CPI is justified in the light of the Decision of the Authority regarding Ranolia Hydro Power Project.
- 5.8.3 The Petitioner has claimed annual O&M cost of US\$ 1.8202 Million. Total O&M has been estimated at 2% of the Project Cost excluding Interest during construction by the Petitioner. The variable O&M cost is 25% of the total claimed O&M cost, and the remainder is fixed O&M.
- 5.8.4 The Authority noted that contrary to the claim of the Petitioner, no indexation of O&M based on European or Chinese Indices has been allowed in the decision of Ranolia hydropower project.
- 5.8.5 Based on the precedents and the policy, the indexation of O&M cost based on US\$/PKR exchange rate & US CPI for foreign O&M component, and local CPI (General) for the local O&M component is hereby allowed for the Project.
- 5.8.6 Further, the Authority has observed that the Petitioner's claimed O&M cost is considerably higher than the O&M cost allowed previously to recently developed hydropower projects as shown hereunder:

Project	Total O&M Cost
2.6 MW Machai	US\$ 0.155 Million (allowed)
17 MW Ranolia	US\$ 0.716 Million (allowed)
20 MW Olympus	US\$ 0.971 Million (allowed)
36.6 MW Daral Khwar	US\$ 1.820 Million (claimed)

- 5.8.7 In view of the aforementioned, the Authority has decided to allow O&M cost of US\$ 1.31 Million as the maximum cap based on 1.8% of the assessed CAPEX cost of the Project, subject to adjustment as per actual. The following is a comparison of claimed vs. allowed O&M components:

O&M Cost Claimed vs. Allowed					
	Claimed		Allowed		
	US\$ Mln	Rs. /kWh	US\$ Mln	Rs. /kWh	
Variable O&M - Local	0.23	0.1563	0.16	0.1114	
Variable O&M - Foreign	0.23	0.1563	0.16	0.1114	
Fixed O&M - Local	1.09	0.7500	0.79	0.5346	
Fixed O&M - Foreign	0.27	0.1875	0.20	0.1337	
Total O&M Cost - Local & Foreign	1.82	1.2501	1.31	0.8911	

- 5.9 **Whether the cost of Local Debt to be arranged from Hydel Development Fund (HDF) @ 10.25% fixed rate is justified?**
- 5.9.1 The Petitioner submitted that major lending for the Project shall be from Hydel Development Fund (HDF) and requested the Authority to allow the local loan component based on fixed rate of 10.25% per annum with a debt tenor of 20 years. As per the Petitioner, the local debt service component will remain fixed for 20 years, whereas the foreign debt from ADB is also based on tenor of 20 years.
- 5.9.2 During the hearing the Petitioner submitted that Interest Rate of 10.25% has been assumed for calculation of Interest During Construction (IDC) on the basis of Hydel Development Fund (HDF)



AL

financing issued by Government of Khyber Pakhtunkhwa Finance Department against Letter no.1/12(F/C) FD/2014-15/Hydel/Vol: 5 Dated 2nd December 2014; whereas at the time of EPC Contract signing, the Market rate available based on KIBOR + 3% was 14.79% (11.79% + 3%). The Petitioner claimed that the HDF financing rate was lower by 4.54% at the time, and is therefore justified.

5.9.3 The Authority observed that the rate of HDF rate is 4.1% above the current 3 month KIBOR. In comparison, the lending rates for some of the government relent loans of WAPDA Hydroelectric are as high as 17%. Therefore, considering the tenor of the loan (20 years) and the comparable 20 year PIB rate, the rate of HDF of 10.25% is justified and is hereby allowed.

5.9.4 The interest rate of foreign loan as per the REDSIP loan agreement, i.e. LIBOR + 0.6% is favorable compared to commercial foreign financing rates, therefore the same is allowed as well.

5.9.5 Moreover, no indexation/adjustment of interest rate is required for local loan, whereas foreign loan rate will be adjusted for variations in the LIBOR rate.

5.10 **Whether withholding tax should be allowed as pass through item?**

5.10.1 The Petitioner requested that any withholding tax on dividends will be considered pass-through. The Authority in its recent decisions has disallowed withholding tax on dividends as pass-through. Therefore, withholding tax on dividends is hereby disallowed for the Project.

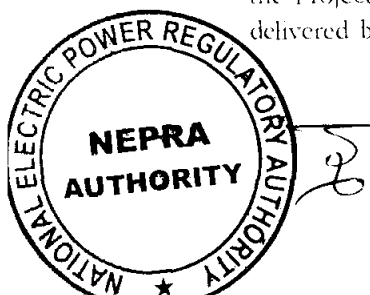
5.11 **Whether the annual energy of 154 GWh and bases thereof are justified?**

5.11.1 As per the Petitioner the Project Capacity is 36.6 MW and Net Annual Energy is 154 GWh based on 48.00% Plant Factor. The Petitioner submitted that the turbine specs of 36.60 MW (15.30 + 15.30 + 6.00) are based on hydrological data of daily average flows pertaining to the 52 years (1961 to 2012).

5.11.2 The Authority expressed during the hearing that it is important to include in the feasibility study only that data which is reliable. The Petitioner in response stated that the hydrological data for the project was collected in coordination with WAPDA.

5.11.3 The representative of PPDB stated during the hearing that the hydrological data of the project has been estimated after applying statistical approach on data from nearby met station. However, it seems that no effort has been made to install proper gauges at the site to authenticate the hydrological data forming the basis of the plant design. The PPDB vide its written comments dated September 13, 2017 reiterated that the estimated discharge data collected from metrological station is not authenticated by installation of gauge station, whereas the data used in the feasibility is also very old (up to 1995) and needs to be updated. The PPDB has suggested that the major design parameters of the project including discharge and head on the basis of which the capacity has been worked out need to be confirmed along with the annual estimated energy.

5.11.4 The Authority considers that the project has already been constructed and has been designed on the basis of certain parameters determined in the Feasibility Study. Therefore, it may be too late to change the parameters of the project. However, the apprehensions regarding the deliverability of the estimated annual energy may be valid. In view of the uncertainty regarding hydrology that enshrouds the Project, the Authority has decided that a proviso be added in the PPA that the annual energy delivered by the plant will be reviewed after a period of five (5) years and the tariff will be revised



HL

Handwritten signature or initials.

downwards on the basis of the average actual delivered energy in case the average actual energy delivered is higher than the benchmark annual energy of 154 GWh; however, no upward adjustment in tariff will be made if the average actual energy delivered is less than the benchmark annual energy of 154 GWh and in such a case the benchmark energy of 154 GWh will remain the upper limit for Energy Payment purposes.

5.12 Whether Water Use Charge is payable for a public sector project?

5.12.1 The Petitioner claimed that energy charge will include Water Use charge @ PKR 0.425/kWh at COD. However, since water use charge is allowable for only private sector projects under the GOP Policy, the Petitioner was asked to justify its claim of Water Use Charge for this public sector project.

5.12.2 At the hearing, the Petitioner insisted that as per Government of KP policy 2016, the Water Use Charges (WUC) are payable to hydropower projects, whether they are public, private or Private Public Partnership (PPP) Projects.

5.12.3 In this regard, the Petitioner made reference to KP Hydropower Policy 2016, wherein types of Hydropower Project under Section 1.4.2 (V) are defined as Private, Public or Public Private Partnership Hydropower Projects initiated and awarded by PEDO under the Power Policy. The Petitioner stated that Section 5 (38) of the KP Hydropower Policy 2016 stipulates that WUC will be paid @ Rs. 0.425/kWh by the power projects under the Power Policy to the GokP for projects located in KP. The Petitioner further stated that as per the policy, WUC will be paid on units delivered basis and will be indexed with Consumer Price Index (CPI) annually; the indexed component of WUC shall not exceed the actual expense; and the first such adjustment shall be due after one year of COD.

5.12.4 The Authority noted that under the Federal Power Policy of 2015, Water Use Charges are only payable to private sector projects. Therefore, in line with the policy, the Authority has decided to disallow Water Use Charge for the Project.

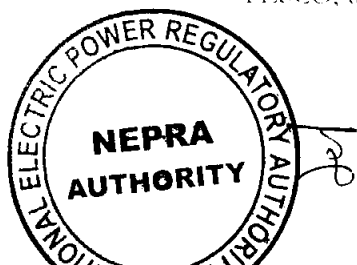
5.13 Whether Consent of the Power Purchaser has been obtained?

5.13.1 The Authority observed that no information regarding NOCs/Consents from the power purchaser was submitted at the time of filing of the Petition.

5.13.2 The Petitioner was questioned during the hearing whether any progress has been made for obtaining the necessary NOCs/ Consents from the power purchaser for the Project, and if not then what are the factors behind the delay. The Petitioner explained that it has obtained approval of Interconnection Study Report for the Project from PESCO, subsequently, request has been submitted to PESCO for Issuance of following Consents for purchase of power:

- i. Power Evacuation Certificate.
- ii. Power Absorption Certificate.
- iii. Consent for enabling CPPA-G to procure power on behalf of PESCO.
- iv. Consent for entering into Back to Back agreement/ reverse administration agreement with CPPA-G simultaneous to signing of Energy Purchase Agreement.

5.13.3 The Petitioner stated during the hearing that once the necessary approvals are obtained from PESCO, the process of obtaining consent of power purchase from CPPA-G will be initiated. A copy



of PEDO letter dated September 07, 2017 was provided whereby PEDO has requested PESCO to provide the necessary consent/ certificates for purchase of power.

5.13.4 At the hearing the representative of CPPA indicated that in the past PEDO has been approaching CPPA for power purchase agreements of its plants only after achieving COD, whereas normally the negotiations for power purchase agreements begin before construction of projects. The Petitioner responded that the consent of the power purchaser in written form is merely a formality, because practically all coordination with PESCO is taking place for the purpose of construction of transmission line mainly on the basis of an understanding between PEDO and PESCO on this matter.

5.13.5 The Authority has noted with concern that the Petitioner is already very late in obtaining the necessary consents from the power purchaser. Without the necessary consents, the project would face difficulty in executing PPA, like in the case of Pehur HPP. In view thereof, the Petitioner was encouraged on numerous occasions during the proceedings to expedite the process of obtaining the necessary consents and PPA negotiations with the power purchaser.

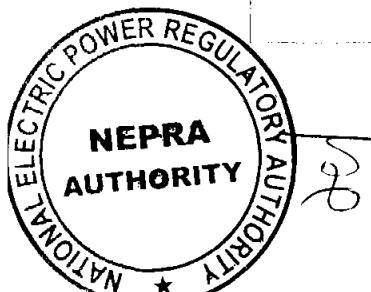
5.14 **Return on Equity**

5.14.1 The Petitioner requested for 17% IRR based return on equity. In its recent determinations, the Authority allowed 17% IRR for hydropower projects, therefore the same is allowed for the Project.

6 ORDER

Pursuant to Rule 6 of the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000, read with Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, Pakhtunkhwa Energy Development Organization (the Petitioner) is allowed to charge, for its Daral Khwar Hydropower Project, the following specified/approved tariff for delivery of electricity to the Power Purchaser:

Tariff Components	Years 1-20 Rs./kWh	Years 21-30 Rs./kWh	Indexation
Fixed Charges			
Fixed O & M			
Local	0.5346	0.5346	CPI - General
Foreign	0.1337	0.1337	USD/PKR & US CPI
Insurance	0.3554	0.3554	USD/PKR
Debt service (Local)	5.2939	-	-
Debt service (Foreign)	0.0166	-	USD/PKR & LIBOR
Return on equity	1.9092	1.9092	USD/PKR
Return on equity during construction	0.4862	0.4862	USD/PKR



Handwritten signature

Handwritten signature

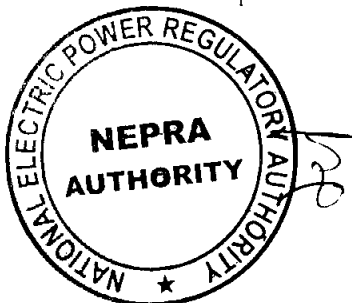
Variable Charges			
Variable O & M - Local	0.1114	0.1114	CPI - General
Variable O & M - Foreign	0.1114	0.1114	USD/PKR & US CPI
Total	8.9522	3.6418	

- i) The reference tariff has been calculated on the basis of net annual benchmark energy generation of 154 GWh for installed capacity of 36.6 MW.
- ii) The above charges will be limited to the extent of net annual energy generation of 154 GWh. Net annual generation supplied during a year to the Power Purchaser in excess of benchmark energy of 154 GWh, will be charged at 10% of the prevalent approved tariff. The annual energy delivered by the plant will be reviewed after a period of five (5) years and the tariff will be revised downwards on the basis of the average actual delivered energy in case the average actual delivered energy is higher than the benchmark net annual energy of 154 GWh. No upward adjustment in tariff will be made in case the average actual delivered energy is less than the benchmark net annual energy of 154 GWh and in such a case the benchmark net annual energy of 154 GWh will remain the upper limit for Energy Payment purposes.
- iii) 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.
- iv) The reference USD/PKR rate has been assumed as 104.6935.
- v) The reference EUR/PKR rate has been assumed as 110.73.
- vi) The above tariff is applicable for a period of thirty years commencing from the commercial operations date (COD).
- vii) The component wise tariff is indicated at Annex-I.
- viii) Debt Servicing Schedule is attached as Annex-II.

I. One Time Adjustments

The following onetime adjustments shall be applicable to the reference tariff:

- a. The specific items of project cost to be paid in foreign currency (i.e. USD or EUR) will be adjusted at COD on account of actual variation in exchange rate over the reference USD/PKR exchange rate of Rs. 104.6935 and reference EUR/PKR exchange rate of 110.73 on production of verifiable documentary evidence by the Petitioner. For all project costs payable in PKR, the amounts allowed in US\$ will be converted into PKR using the reference USD/PKR exchange rate of Rs. 104.6935.
- b. Duties and/or taxes, not being of refundable nature, imposed on the Petitioner up to the commencement of its commercial operations will be subject to adjustment at actual on COD, upon production of verifiable documentary evidence to the satisfaction of the Authority.



[Handwritten signature]

- c. Adjustment of the interconnection cost to be borne by the Petitioner, if any, will be made at COD upon submission of a detailed plan duly endorsed by the Power Purchaser and authentic verifiable documents, to the satisfaction of the Authority.
- d. Land and Resettlement costs will be allowed as per actual, as against US\$ 1.550 Million allowed now, upon production of verifiable documentary evidence.
- e. Financial charges will be adjusted at COD on the basis of actual expense, up to a maximum ceiling of 3% of the total debt allowed (excluding the impact of interest during construction and financial charges), on production of authentic documentary evidence.
- f. The interest during construction will be adjusted at COD on the basis of actual debt draw downs (within the overall debt allowed by the Authority at COD), actual USD/PKR exchange rate variation for foreign loan and actual interest rates not exceeding the limit of 6 months LIBOR plus 0.60%, during the project 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 return on equity (including return on equity during construction) will be adjusted at COD on the basis of USD/PKR exchange rate variation.
- i. 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.
- j. 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.

II. Hydrological Risk

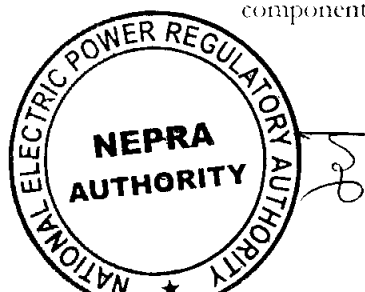
The Power Purchaser will be required to bear hydrological risk only to the extent of 154 GWh net annual energy generation. The annual energy delivered by the plant will be reviewed after a period of five (5) years and the hydrological risk will thereafter be borne only to the extent of average actual delivered energy over the first five (5) years of operation. Payment on account of hydrological risk shall be made by the Power Purchaser, on the basis of benchmark monthly energy generation, based on the average hydrology for that particular month.

III. Indexations:

The following indexations 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 O&M foreign component will be adjusted on account of variation in dollar/rupee exchange rate and US CPI.



Handwritten signature

Handwritten signature

Quarterly adjustments for inflation and exchange rate variation will be made on 1st July, 1st October, 1st January and 1st April respectively on the basis of 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:

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

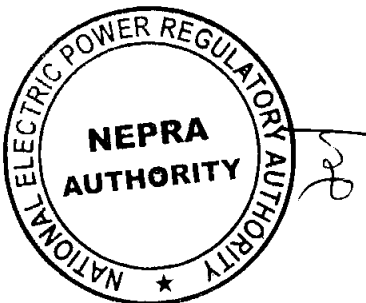
$$F O\&M_{(REV)} = F O\&M_{(REF)} * US CPI_{(REV)} / US CPI_{(REF)} * ER_{(REV)} / ER_{(REF)}$$

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

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

Where;

- $F O\&M_{(REV)}$ = The revised applicable fixed O&M local component of tariff
- $F O\&M_{(REV)}$ = The revised applicable fixed O&M foreign component of tariff
- $V O\&M_{(REV)}$ = The revised applicable variable O&M local component of tariff
- $V O\&M_{(REV)}$ = The revised applicable variable O&M foreign component of tariff
- $F O\&M_{(REF)}$ = The reference fixed O&M local component of tariff for the relevant period
- $F O\&M_{(REF)}$ = The reference fixed O&M foreign component of tariff for the relevant period
- $V O\&M_{(REF)}$ = The reference variable O&M local component of tariff for the relevant period
- $V O\&M_{(REF)}$ = The reference variable O&M foreign component of tariff for the relevant period
- $CPI_{(REV)}$ = The revised Consumer Price Index (General) as notified by the Pakistan Bureau of Statistics
- $CPI_{(REF)}$ = 216.610 Consumer Price Index (General) of October 2017 notified by the Pakistan Bureau of Statistics



Handwritten signature

US CPI _(REV)	=	The revised US CPI (all urban consumers)
US CPI _(REF)	=	245.519 US CPI (all urban consumers) for the month of October 2017 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 104.6935

ii) Adjustment of insurance component

In case of insurance denominated in US \$, insurance cost component of tariff will be adjusted on account of USD/PKR exchange rate variation on actual basis. Further, insurance component of the reference tariff will be adjusted as per actually incurred prudent costs, subject to the maximum ceiling of 0.75% of the approved EPC cost, on annual basis upon production of authentic documentary evidence by the Petitioner.

iii) Return on equity

The return on equity component of tariff including return on equity during construction will be adjusted on the basis of revised TT & OD selling rate of US Dollar as notified by the National Bank of Pakistan according to the following formula:

$$ROE_{(REV)} = ROE_{(REF)} \times ER_{(REV)} / ER_{(REF)}$$

$$ROEDC_{(REV)} = ROEDC_{(REF)} \times ER_{(REV)} / ER_{(REF)}$$

Where:

ROE _(REV)	=	Revised return on equity component of tariff expressed in Rs/kWh.
ROE _(REF)	=	Reference return on equity component of tariff expressed in Rs/kWh.
ROEDC _(REV)	=	Revised return on equity during construction component of tariff expressed in Rs/kWh.
ROEDC _(REF)	=	Reference return on equity during construction component of tariff expressed in Rs/kWh.
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 of 104.6935

iv) Adjustment for LIBOR variation

The interest part of foreign debt service component will remain unchanged throughout the term except for the adjustment due to variation in 6 months LIBOR, while spread of 0.60% on 6 months LIBOR remaining the same, according to the following formula:

$$\Delta I = P_{(REV)} * (LIBOR_{(REV)} - 0.74\%) / 2$$

Where:

ΔI = the variation in interest charges applicable corresponding to variation in 6 months LIBOR. ΔI can be positive or negative depending upon whether 6 months LIBOR $_{(REV)}$ per annum > or < 0.74%. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each half year under adjustment.

$P_{(REV)}$ = is the outstanding principal (as indicated in the attached foreign debt service schedule to this order at Annex-II) on a bi-annual basis at the relevant calculations date.

Note:

Adjustments on account of inflation, foreign exchange rate variation, LIBOR variation and actual insurance will be approved and announced by the Authority within fifteen working days after receipt of the Petitioner's request for adjustment in tariff in accordance with the requisite indexation mechanism stipulated herein.

V. Terms and Conditions of Tariff:

Design & Manufacturing Standards:

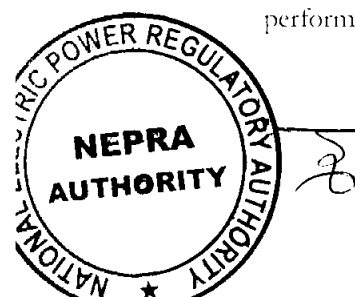
Hydro power generation system shall be designed, manufactured and tested in accordance with the latest IEC standards or other equivalent standards. All plant and equipment shall be new.

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.

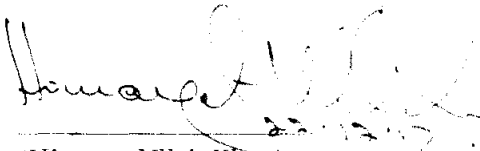


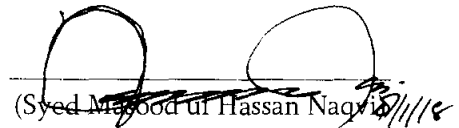
[Handwritten signature]


Others:

- i. The Authority has allowed/approved only those cost(s), 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.
- iii. The order along with reference tariff table and debt service schedule as attached thereto are recommended for notification by the Federal Government in the official gazette in accordance with Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

AUTHORITY

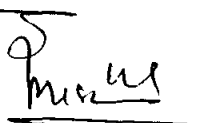

(Himayat Ullah Khan)
Member

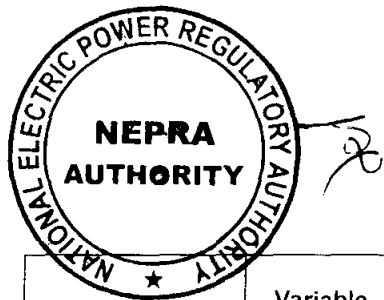

(Syed Masood ul Hassan Naqvi)
Member


(Saif Ullah Chattha)
Vice Chairman 29.12.2017

- Did not attend -
(Tariq Saddozai)
Chairman




09 01 18



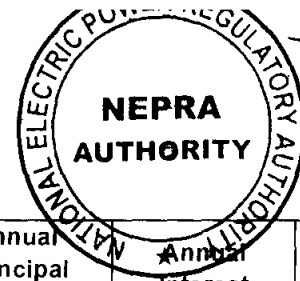
DARAL KHWAR HPP
36.6 MW REFERENCE TARIFF

Year	Variable O&M Local	Variable O&M Foreign	Fixed O&M Local	Fixed O&M Foreign	Insurance	Return on Equity (ROE)	ROE During Construction	Debt Servicing (Local)	Debt Servicing (Foreign)	Total Tariff
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh
1	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
2	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
3	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
4	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
5	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
6	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
7	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
8	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
9	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
10	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
11	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
12	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
13	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
14	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
15	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
16	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
17	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
18	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
19	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
20	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	5.2939	0.0166	8.9522
21	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	-	-	3.6418
22	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	-	-	3.6418
23	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	-	-	3.6418
24	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	-	-	3.6418
25	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	-	-	3.6418
26	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	-	-	3.6418
27	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	-	-	3.6418
28	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	-	-	3.6418
29	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	-	-	3.6418
30	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	-	-	3.6418
Levelized Tariff	0.1114	0.1114	0.5346	0.1337	0.3554	1.9092	0.4862	4.7810	0.0150	8.4377

DARAL KHWAR HPP
Debt Servicing Schedule

Local Debt						Annual Principal Repayment Rs./kWh	Annual Interest Rs./kWh	Annual Debt Servicing Rs./kWh
Period	Principal Million PKR	Repayment Million PKR	Mark-Up Million PKR	Balance Million PKR	Debt Service Million PKR			
	6.876.50	55.21	352.42	6.821.29	407.6317			
	6.821.29	58.04	349.59	6.763.24	407.6317			
1	6.876.50	113.25	702.01	6.763.24	815.2634	0.7354	4.5585	5.2939
	6.763.24	61.02	346.62	6.702.23	407.6317			
	6.702.23	64.14	343.49	6.638.09	407.6317			
2	6.763.24	125.16	690.11	6.638.09	815.2634	0.8127	4.4812	5.2939
	6.638.09	67.43	340.20	6.570.66	407.6317			
	6.570.66	70.89	336.75	6.499.77	407.6317			
3	6.638.09	138.32	676.95	6.499.77	815.2634	0.8981	4.3957	5.2939
	6.499.77	74.52	333.11	6.425.25	407.6317			
	6.425.25	78.34	329.29	6.346.92	407.6317			
4	6.499.77	152.86	662.41	6.346.92	815.2634	0.9926	4.3013	5.2939
	6.346.92	82.35	325.28	6.264.56	407.6317			
	6.264.56	86.57	321.06	6.177.99	407.6317			
5	6.346.92	168.93	646.34	6.177.99	815.2634	1.0969	4.1970	5.2939
	6.177.99	91.01	316.62	6.086.98	407.6317			
	6.086.98	95.67	311.96	5.991.31	407.6317			
6	6.177.99	186.68	628.58	5.991.31	815.2634	1.2122	4.0817	5.2939
	5.991.31	100.58	307.05	5.890.73	407.6317			
	5.890.73	105.73	301.90	5.785.00	407.6317			
7	5.991.31	206.31	608.95	5.785.00	815.2634	1.3397	3.9542	5.2939
	5.785.00	111.15	296.48	5.673.85	407.6317			
	5.673.85	116.85	290.78	5.557.00	407.6317			
8	5.785.00	228.00	587.27	5.557.00	815.2634	1.4805	3.8134	5.2939
	5.557.00	122.84	284.80	5.434.16	407.6317			
	5.434.16	129.13	278.50	5.305.03	407.6317			
9	5.557.00	251.97	563.30	5.305.03	815.2634	1.6361	3.6578	5.2939
	5.305.03	135.75	271.88	5.169.29	407.6317			
	5.169.29	142.71	264.93	5.026.58	407.6317			
10	5.305.03	278.45	536.81	5.026.58	815.2634	1.8081	3.4858	5.2939
	5.026.58	150.02	257.61	4.876.56	407.6317			
	4.876.56	157.71	249.92	4.718.85	407.6317			
11	5.026.58	307.73	507.54	4.718.85	815.2634	1.9982	3.2957	5.2939
	4.718.85	165.79	241.84	4.553.06	407.6317			
	4.553.06	174.29	233.34	4.378.77	407.6317			
12	4.718.85	340.08	475.19	4.378.77	815.2634	2.2083	3.0856	5.2939
	4.378.77	183.22	224.41	4.195.55	407.6317			
	4.195.55	192.61	215.02	4.002.94	407.6317			
13	4.378.77	375.83	439.43	4.002.94	815.2634	2.4404	2.8535	5.2939
	4.002.94	202.48	205.15	3.800.46	407.6317			
	3.800.46	212.86	194.77	3.587.61	407.6317			
14	4.002.94	415.34	399.92	3.587.61	815.2634	2.6970	2.5969	5.2939
	3.587.61	223.77	183.86	3.363.84	407.6317			
	3.363.84	235.23	172.40	3.128.60	407.6317			
15	3.587.61	459.00	356.26	3.128.60	815.2634	2.9805	2.3134	5.2939
	3.128.60	247.29	160.34	2.881.31	407.6317			
	2.881.31	259.96	147.67	2.621.35	407.6317			
16	3.128.60	507.26	308.01	2.621.35	815.2634	3.2938	2.0000	5.2939
	2.621.35	273.29	134.34	2.348.06	407.6317			
	2.348.06	287.29	120.34	2.060.77	407.6317			
17	2.621.35	560.58	254.68	2.060.77	815.2634	3.6401	1.6538	5.2939
	2.060.77	302.02	105.61	1.758.75	407.6317			
	1.758.75	317.50	90.14	1.441.25	407.6317			
18	2.060.77	619.51	195.75	1.441.25	815.2634	4.0228	1.2711	5.2939
	1.441.25	333.77	73.86	1,107.49	407.6317			
	1,107.49	350.87	56.76	756.61	407.6317			
19	1,441.25	684.64	130.62	756.61	815.2634	4.4457	0.8482	5.2939
	756.61	368.86	38.78	387.76	407.6317			
	387.76	387.76	19.87	(0.00)	407.6317			
20	756.61	756.61	58.65	(0.00)	815.2634	4.9131	0.3808	5.2939

Handwritten signature/initials



DARAL KHWAR HPP
Debt Servicing Schedule

Period	Foreign Debt					Annual Principal Repayment Rs./kWh	Annual Interest Rs./kWh	Annual Debt Servicing Rs./kWh
	Principal Million US\$	Repayment Million US\$	Mark-Up Million US\$	Balance Million US\$	Debt Service Million US\$			
	0.3965	0.0080	0.0041	0.3884	0.0122			
	0.3884	0.0081	0.0041	0.3803	0.0122			
1	0.3965	0.0162	0.0082	0.3803	0.0244	0.0110	0.0056	0.0166
	0.3803	0.0082	0.0040	0.3721	0.0122			
	0.3721	0.0083	0.0039	0.3638	0.0122			
2	0.3803	0.0165	0.0079	0.3638	0.0244	0.0112	0.0053	0.0166
	0.3638	0.0084	0.0038	0.3554	0.0122			
	0.3554	0.0085	0.0037	0.3470	0.0122			
3	0.3638	0.0168	0.0075	0.3470	0.0244	0.0114	0.0051	0.0166
	0.3470	0.0086	0.0036	0.3384	0.0122			
	0.3384	0.0086	0.0035	0.3298	0.0122			
4	0.3470	0.0172	0.0072	0.3298	0.0244	0.0117	0.0049	0.0166
	0.3298	0.0087	0.0034	0.3211	0.0122			
	0.3211	0.0088	0.0034	0.3122	0.0122			
5	0.3298	0.0176	0.0068	0.3122	0.0244	0.0119	0.0046	0.0166
	0.3122	0.0089	0.0033	0.3033	0.0122			
	0.3033	0.0090	0.0032	0.2943	0.0122			
6	0.3122	0.0179	0.0064	0.2943	0.0244	0.0122	0.0044	0.0166
	0.2943	0.0091	0.0031	0.2852	0.0122			
	0.2852	0.0092	0.0030	0.2760	0.0122			
7	0.2943	0.0183	0.0061	0.2760	0.0244	0.0124	0.0041	0.0166
	0.2760	0.0093	0.0029	0.2667	0.0122			
	0.2667	0.0094	0.0028	0.2573	0.0122			
8	0.2760	0.0187	0.0057	0.2573	0.0244	0.0127	0.0039	0.0166
	0.2573	0.0095	0.0027	0.2478	0.0122			
	0.2478	0.0096	0.0026	0.2382	0.0122			
9	0.2573	0.0191	0.0053	0.2382	0.0244	0.0130	0.0036	0.0166
	0.2382	0.0097	0.0025	0.2286	0.0122			
	0.2286	0.0098	0.0024	0.2188	0.0122			
10	0.2382	0.0195	0.0049	0.2188	0.0244	0.0132	0.0033	0.0166
	0.2188	0.0099	0.0023	0.2089	0.0122			
	0.2089	0.0100	0.0022	0.1989	0.0122			
11	0.2188	0.0199	0.0045	0.1989	0.0244	0.0135	0.0030	0.0166
	0.1989	0.0101	0.0021	0.1888	0.0122			
	0.1888	0.0102	0.0020	0.1786	0.0122			
12	0.1989	0.0203	0.0041	0.1786	0.0244	0.0138	0.0028	0.0166
	0.1786	0.0103	0.0019	0.1683	0.0122			
	0.1683	0.0104	0.0018	0.1578	0.0122			
13	0.1786	0.0207	0.0036	0.1578	0.0244	0.0141	0.0025	0.0166
	0.1578	0.0105	0.0016	0.1473	0.0122			
	0.1473	0.0106	0.0015	0.1367	0.0122			
14	0.1578	0.0212	0.0032	0.1367	0.0244	0.0144	0.0022	0.0166
	0.1367	0.0107	0.0014	0.1259	0.0122			
	0.1259	0.0109	0.0013	0.1151	0.0122			
15	0.1367	0.0216	0.0027	0.1151	0.0244	0.0147	0.0019	0.0166
	0.1151	0.0110	0.0012	0.1041	0.0122			
	0.1041	0.0111	0.0011	0.0930	0.0122			
16	0.1151	0.0221	0.0023	0.0930	0.0244	0.0150	0.0016	0.0166
	0.0930	0.0112	0.0010	0.0818	0.0122			
	0.0818	0.0113	0.0009	0.0705	0.0122			
17	0.0930	0.0225	0.0018	0.0705	0.0244	0.0153	0.0012	0.0166
	0.0705	0.0114	0.0007	0.0590	0.0122			
	0.0590	0.0116	0.0006	0.0475	0.0122			
18	0.0705	0.0230	0.0014	0.0475	0.0244	0.0156	0.0009	0.0166
	0.0475	0.0117	0.0005	0.0358	0.0122			
	0.0358	0.0118	0.0004	0.0240	0.0122			
19	0.0475	0.0235	0.0009	0.0240	0.0244	0.0160	0.0006	0.0166
	0.0240	0.0119	0.0003	0.0121	0.0122			
	0.0121	0.0121	0.0001	-	0.0122			
20	0.0240	0.0240	0.0004	-	0.0244	0.0163	0.0003	0.0166