

**TARIFF PROPOSAL
FOR
3.2 MW REHRA
HYDROPOWER PLANT**

Submitted To:

Islamabad Electric Supply Company

Chief Executive Officer
Street 40, G-7/4, Islamabad, Pakistan

Submitted By:

Power Development Organization

PDO Complex, Upper Chattar,
Muzaffarabad, Azad Jammu & Kashmir

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1. INTRODUCTION

1.1 POWER DEVELOPMENT ORGANIZATION

Azad Jammu & Kashmir, Power Development Organization (AJK-PDO) having head office at Muzaffarabad, is vested with responsibility of development of hydropower resources in the state of Azad Jammu & Kashmir under the Act, 2014. The prime objective of Power Development Organization is development of indigenous hydropower resources to become self-reliant in energy needs of the State of AJ&K. The main functions of the organization include generation of hydroelectricity, dispersal of power from power stations to the grid stations and O&M of power stations.

Presently, hydropower stations having collective capacity of 64.72 MW are operational and HPP of collective capacity 67.20 MW are under construction. Moreover, HPP of collective capacity 172 MW are under process of approval for implementation. The detail of hydropower projects under the jurisdictions of AJK PDO is as under:

Table 1-1: List of Power Project Under AJK-PDO

Sr. No	Name of HPP	Capacity (MW)	Location (Dist.)	Year of Completion
A. Commissioned				
1	Kundal Shahi	2.00	Neelum	1997
2	Khathi	3.20	Jhelum Valley	1998
3	Leepa	1.60	Jhelum Valley	2000
4	Jagran-I	30.40	Neelum	2000
5	Changan	0.05	Neelum	2008
6	Sharian	3.20	Jhelum Valley	2011
7	Halmat	0.32	Neelum	2013
8	Qadir Abad	3.00	Bagh	2013
9	Ranger-I	0.60	Poonch	2013
10	Rerha	3.20	Bagh	2014
11	Battar	4.80	Haveli	2016
12	Sharda	3.00	Neelum	2016
13	Kel Margla	0.75	Neelum	2016
14	Glater	1.00	Kotli	2018
15	Dhanan	1.70	Kotli	2018
16	Patika	0.50	Muzaffarabad	2018
17	Guin Nallah	0.25	Poonch	2019
18	Ranger-II	0.45	Poonch	2019
19	Hajira	1.60	Poonch	2019
20	Kappa Banamula	2.00	Jhelum Valley	2019
21	Kel	0.50	Neelum	2019
22	Hillan	0.60	Haveli	2020
Total-A		64.72		
B. Under Construction				
Sr. No	Name of HPP	Capacity (MW)	Location (Dist.)	COD
1	Jhing	15.00	Muzaffarabad	Apr-21
2	Jagran-II	48.00	Neelum	Jun-22
3	Bhedi Doba	1.00	Haveli	Jun-21
4	Chamfall	3.20	Jhelum Valley	Aug-22
Total-B		67.20		

C. Under Process

Sr. No	Name of HPP	Capacity (MW)	Location (Dist.)	COD
1	Nardagian	3.20	Jhelum Valley	Nov-24
2	Makari	1.00	Muzaffarabad	Nov-24
3	Riali -I	1.60	Muzaffarabad	Oct-25
4	Batdara	5.00	Muzaffarabad	Dec-25
5	Nagdar	35.00	Neelum	Dec-26
6	Dowarian	40.00	Neelum	Jan-26
7	Jagran- IV	22.00	Neelum	Feb-27
8	Nairy Bela	3.20	Jhelum Valley	Apr-27
9	Kasorkot Talwari	2.90	Jhelum Valley	Apr-27
10	Kappa Banamula Phase -II	2.00	Jhelum Valley	May-27
11	Nauseri Diversion	48.00	Muzaffarabad	Jun-28
12	Tajian	4.00	Neelum	Jan-28
13	Sharda-II	5.00	Neelum	Feb-28
Total-C		172.90		

D. Candidate

Sr. No	Name of HPP	Capacity (MW)	Location (Dist.)	COD
1	Paddar,	3.00	Bagh	Mar-27
2	Janawai	12.00	Neelum	Mar-29
3	Taobut	10.00	Neelum	Apr-29
4	Shounter	48.00	Neelum	May-29
5	Dhani Mai Sahiba	50.00	Muzaffarabad	Jun-30
6	Kalamula	2.20	Haveli	Jul-30
7	Hundi Chhapan	3.50	Poonch	Aug-30
8	Bhango Aronta	2.10	Poonch	Sep-30
9	Gharata Bhango	1.70	Poonch	Oct-30
10	Daar Banggan,	3.00	Poonch	Nov-30
11	Balmi	2.00	Kotli	Feb-31
12	Malkan Sarsawah	2.20	Kotli	Mar-31
13	Panagh Dandali	1.80	Kotli	Apr-31
14	Gurha Panag	1.50	Kotli	May-31
15	Sandoa Cross	1.75	Bhamber	Jun-31
Total-D		144.75		
Grand Total		449.57		

1.2 TARIFF PROPOSAL

The Authority is exclusively responsible for regulating the provision of electric power services and to determine tariffs pursuant to the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the "NEPRA Act"). The NEPRA Act specifically mandates the National Electric Power Regulatory Authority ("NEPRA") to determine tariffs and the NEPRA Tariff (Standards & Procedure) Rules 1998 lay down the broad procedural framework for tariff applications and determinations. In addition, the NEPRA (Import of Power) Regulations, 2017 prescribe the requirements for import of power from territories where the applicability of the NEPRA Act is not extended.

This tariff petition is being submitted under following laws, rules and regulations:

- Section 7(3) and Section 31 of the NEPRA Act;
- Regulation 3 of the NEPRA (Import of Power) Regulations, 2017;

- Rule 3 of the NEPRA Tariff (Standards & Procedure) Rules, 1998;
- NEPRA (Benchmark for Tariff Determination), Guidelines, 2018; and
- Any other enabling provisions of the applicable law and policy.

1.3 AUTHORIZED REPRESENTATIVES

Authorized representative for the purposes of this tariff proposal are:

- AJK-PDO
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1.4 NEED OF PROJECT

The state of Azad Jammu & Kashmir is abundantly blessed with hydropower resources which need to be developed on priority. As primary source of renewable energy, the hydropower potential of the State offers bright prospects of development both for the purpose of meeting local and national demand.

In the face of rising energy crisis and escalating cost of fossil fuels, alternate energy resources are being explored as a National objective. Being inherently deficient in fossil fuels and in view of fast depleting natural gas reserves, Pakistan has to rely heavily on expensive fuel imports if it opts to continue expanding its thermal generation plans. But with escalating cost of imported fuels and international concerns on carbon emissions, this option may not be viable. It is, thus, even more necessary to explore alternate sources of energy within the country to reduce dependence on imported fuel and ensure energy supply to maintain industrial and socio-economic growth.

The electricity from the power plant is being supplied locally to district headquarters, Bagh City and adjacent areas. The approximate demand of the area is 13 MW.

The hydropower plant is connected with 132 KV grid station Bagh for maximum utilization of installed capacity of power station. Presently, power plant is operational in isolation mode and supplying power to Dhuli feeder connected with 132 KV Grid Station Bagh, but during load shedding period on Dhuli feeder, power station face forced outage due to loss of synchronization state with grid station.

2. PROJECT DESCRIPTION

3.2 MW Rerah Hydropower Project (the Project) is located at Rerah, Tehsil and District Bagh, AJK (about 4 km upstream of confluence of Rerah Nullah with Mahl river). The project was developed by Hydro Electric Board now Power Development Organization in July 2014. The Project is currently operated and maintained by PDO. The electricity is being supplied to Local Area bagh city and adjoining areas. The plant is connected to 132kV grid station at Bagh through 11kV transmission line of 8 km.

Rerah Nullah is a right tributary of Mahl river, which itself is a left tributary of Jhelum river. The flows in Rerah nullah are perennial arising out of glacial melts of famous Pir Kanthi mountain Peaks having a elevation of about 3331.2 masl. The nullah has its confluence with Mahl river at about 10 km upstream of Bagh town. The weir is located about 4 km upstream of confluence of Rerah nullah with Mahl river and surface powerhouse is present on right bank of Mahl river in the open valley just upstream of the Rerah village.

2.1 BACKGROUND

Brief background with the milestones achieved are presented below.

Table 2-1: Major Milestones achieved

S. NO.	Milestone	Date
1.	Approval of PC-I	August 2008
2.	Process for appointment of Contractor for Civil Works	June 2009
3.	Appointment of Contractor for approach road	Nov. 2011
4.	Appointment of Contractor of Protection wall Powerhouse building	November 2012
5.	Commercial Operation Date	July 2014

- IESCO was approached on 25.07.2013 for the interconnection of 3 MW Qadirabad & 3.2 MW Rehra Hydropower Station with 132 KV grid station Bagh.
- Correspondence and meetings were held regarding the matter of interconnection and Power Purchase from the power plants.
- Requisites were made by IESCO for the approval of interconnection including the detail interconnection study, feasibility study report.
- PDO conducted the interconnection study by the Consultants and submitted the same on 30.06.2015.
- Comments were received from IESCO which were replied satisfactorily.
- IESCO was pleased to approve the Interconnection study of 3.2 MW Rehra HPP and 3.0 MW Qadirabad HPP on 18.04.2017.
- Upon request of PDO, IESCO approached NEPRA on 25.04.2016 seeking guidelines to be followed for purchase of electricity from the Project's
- NEPRA on 23.05.2016 responded to follow Interim Power Procurement (Procedures and Standards) Regulations, 2005. (IPPR-2005) Further stated that the tariff negotiated between the two parties should be made part of the Power/Energy Purchase Agreement and may be put up to NEPRA along with a Power Acquisition Request under IPPR-2005 for approval.
- IESCO, second time, approached NEPRA with certain queries on 07.11.2016 which were duly responded by the Authority on 18.11.2016.

- IESCO approached NEPRA on 01.06.2017 with the Power Acquisition Request of the Projects.
- NEPRA vide letter dated 10.01.2018 intimated on the PAR that:
"request was considered by the Authority and it was decided that NEPRA Interim Power Procurement Regulation 2005 (IPPR-2005) are no more relevant for the purposes of import of electric power. Since both the power projects from where the electric power is proposed to be purchased are located in Azad Jammu & Kashmir, therefore, the applicable law for the purpose is Import of Power Regulations, 2017 notified on 23rd of June, 2017." Further stated to re-submit the tariff proposed under the relevant provisions.

NEPRA also stated that *"it is, however, observed by the Authority that both the power plants were commissioned in 2013 & 2014 and are delivering electric power to IESCO without any approval of rates from NEPRA. Therefore, you may continue with the existing arrangement with the rate of purchase of Rs. 2.59/kWh as indicated in your subject request subject to final outcome of the proceedings under Import of Power Regulations, 2017."*

- Soon after the decision of NEPRA, PDO requested IESCO to re-submit the tariff under relevant provision as stated by NEPRA.
- IESCO vide letter dated 04.07.2019 required PDO to submit the tariff proposal to IESCO which was submitted to IESCO on 12.09.2019.

2.2 LOCATION

The Project is located about 4 km upstream of confluence of Qadirabad Nullah with Mahl river. Powerhouse is present on right bank of Mahl river in the open valley just upstream of the Rerah village..

2.3 PROJECT DESCRIPTION

The main components of project is located on the left bank Rerah nullah. Weir was selected on Rerah nullah with a crest elevation of 1624.5 and maximum width of 20m. a silt excluder on the left bank, linked with 42 m long connecting channel. The silt excluder is 4.0 m wide and 30m long without transition. About 3400m long power channel was constructed with a design discharge of 2.0³/s to forebay. Forebay is 40m long and 6m wide to absorb surges from turbine regulations.

Table 2-2: Salient Features of the Project

General	
Location	10 km from Bagh and 62 km from Muzaffarabad
Name of Tributary	Rerah Nullah, right bank tributary of Mahl River
Site Geology	Murree Formation (sandstone/Shales)
Hydrology	
Catchment Area	25km ²
Mean Annual Flow	1.55 m ³ /s
Design Discharge	2.00 m ³ /s
Topography	
Gross Head	201m
Net Head	192.30m
Structural:	
Diversion Weir	

Type of Weir	Tyrolean Weir
Height above NSL	4.0m
Length of the Crest	20m
Crest Elevation	1624.5m
Length of Stilling Basin	16m
Width of Stilling Basin	20m
Power Channel	
Channel Section	1.40m x 1.30m, RC
Velocity	1.50m/s
Length of the Channel	3400m
Type of Section	Reinforced Cement Concrete
Silt Excluder	
Total Width	4m
Total Length with Transition	36m
Forebay	
Width	6m
Length	40m
Depth	4.5m
Penstock	
Diameter	1m
Length	378m
Number	1
Powerhouse	
Length	23m
Width	13.5m
Installed Capacity	3.2 MW
Electro-Mechanical	
Type of Turbine	Twin Jet Horizontal Pelton
No. of Units	Two (1.6 MW of each)
Plant Factor	66.7%
Annual Energy Generated	18.697 GWh
Auxiliary Load	0.032 MW
Net Annual Energy (Mean)	18.510 GWh
Voltage of Generator	3.3KV
Voltage of Dispatch	11KV
Location of Grid Station	Bagh
Transmission Line	10km
Construction period	36 months
Cost	
Total Project Cost	PKR 417.269 Million
Debt : Equity	75 : 25

The detail feasibility study has been conducted and made part of PC-I which is provided as Annexure-IV. The feasibility study report covers all relevant aspects of the project i.e. topography, geology, hydrology, project optimization and design, environmental concerns, financial and economic analysis.

A 11KV overhead dedicated lines stand constructed in compliance to load flow study for interconnection of power stations with Grid Station Bagh. The distance of 11 KV overhead line is approximately 5 KM and 8 KM from Qadirabad & Rehra Power Station to Grid Station respectively.

3. PROJECT COST & FINANCING

3.1 CAPITAL EXPENDITURE

The Project capital cost is based on approved PC-I and actual expenditure incurred for civil works, electro-mechanical equipment, land acquisition, and Other Development Cost. Exchange rate of 98.81 is taken as of COD for conversion purposes.

A summary of the actual project cost is presented below;

Table 3-1: Summary of Project Cost

Item	Total (PKR Million)	Total (USD Million)
Civil Works	183.581	1.858
Electro-Mechanical Equipment	113.50	1.149
Land Acquisition	11.50	0.116
Other Development Cost	42.857	0.434
Transmission Line	10.00	0.101
Base Project Cost	361.438	3.658
Interest During Construction	55.831	0.565
Total Project Cost	417.269	4.223

3.1.1 CIVIL WORKS

Total of PKR 183.581 Million (USD 1.858 Million) have been expensed out under the head of civil works. The agreements in lots were executed. Total of 7 agreements for civil works were signed and executed with different contractors. Detail is provided in Table 3-2: Agreements for Civil Works.

Table 3-2: Agreements for Civil Works

Contract Title	PKR
Construction of Diversion Weir and connecting channel	11.700
Construction of Power Channel (RD 00 to 7001)	64.134
Construction of Power Channel (RD 7002 to forebay)	37.250
Construction of forebay, anchor blocks and Powerhouse	59.021
Staff Colony	8.230
Construction of Protection Wall	2.464
Construction of Access Road to Powerhouse	0.782
Total Civil Works	183.581

3.1.2 ELECTRICAL-MECHANICAL EQUIPMENT

An agreement of PKR 113.50 (USD 1.149) Million was executed with the supplier.

3.1.3 LAND ACQUISITION

An amount of PKR 11.5 Million (USD 0.116 Million) has been expensed out under the head of land acquisition. The cost also includes compensation houses, trees and crops affected in the project area.

3.1.4 DEVELOPMENT COST

Total development cost has been incurred amounting PKR 42.857 Million. The breakup of cost is provided in *Table 3-3: Breakup of Development Cost*.

Table 3-3: Breakup of Development Cost

Head	PKR Million
Custom Duties @5% of FEC of E&M	4.330
L/C Charges & Taxes	4.195
Port Clearance & Trans. @2% of cost of equip.	1.732
Erection, installation & commissioning @5% of the equipment cost	5.621
Project Staff	8.490
Project Engineering & Management	7.500
Owner Administration	10.989
Total Development Cost	42.857

3.1.5 TRANSMISSION LINE

An amount of PKR 10 Million was estimated in PC-1 for the cost of transmission line.

3.1.6 INTEREST DURING CONSTRUCTION

Interest During Construction has been calculated on the debt part of the base project cost i.e. PKR 271.079 Million. Total IDC on debt amount to PKR 55.831 Million based on 6-month KIBOR 10.17% as of July 2014.

Table 3-4: Base Debt Drawdown

Year	Debt Drawdown Amount (PKR Million)	Interest During Construction (PKR Million)
First	81.324	8.271
Second	81.324	17.382
Third	108.431	30.178
Total	271.079	55.831

3.2 FINANCING PLAN

The Project is funded through the Annual Development Plan of Government of Azad Jammu & Kashmir. All funds were provided to PDO for the development of the Project. PC-1 was approved and funds were released.

For the purposes of tariff computation, the project cost has been bifurcated into debt & equity based on the NEPRA (Benchmarks for Tariff Determination) Guidelines, 2018.

Table 3-5: Financing Structure

Head	Amount (PKR Million)	Amount (USD Million)
Total Project Cost	417.269	4.223
Debt (75%)	312.951	3.167

Equity (25%)

104.317

1.056

3.2.1 EQUITY

An amount of PKR 104.317 is injected as equity to the Project by PDO, as funded through ADP by GOAJK.

3.2.2 DEBT

The tariff proposed assumed 75% of the Total Project cost as debt based on the NEPRA (Benchmarks for Tariff Determination) Guidelines, 2018. Key assumptions of the debt are as under.

%age of Debt Financing	75%
Total Debt Amount (PKR Million)	312.951
KIBOR	10.17%
Repayment Years	20 years

4. TARIFF & COST OF OPERATIONS

The Reference Tariff is composed of the following components:

Reference Tariff = Operation & Maintenance Cost + Return on Equity + Return on Equity During Construction + Debt Repayment

4.1 ASSUMPTIONS

Following assumptions have been made for the computation of tariff.

Table 4-1: Assumptions for computation of Tariff

Total Project Cost	PKR 417.269M
Debt	PKR 312.951M
Equity	PKR 104.317 M
Exchange Rate	98.81 as of July 2014
KIBOR	10.17% 6 month as of July 2014
Gross Capacity	3.20 MW
Plant Factor	66.70%
Auxiliary Load	0.032 MW
Net Capacity	3.17 MW
Gross Annual Energy	18.697 GWh
Net Annual Energy	18.510 GWh
Hydrological Risk	Take & Pay – to be borne by Power Producer
Total O&M Cost	PKR 5.016 M
Variable O&M	PKR 1.254 M
Fixed O&M	PKR 3.762 M
Construction Period	36 months
IRR	17%

4.2 OPERATION & MAINTENANCE COST

An average expense of PKR 5.016 million per annum resulting into 0.271 PKR/KWh has been spent. The cost included salaries, the salary cost of O&M contractor, security staff, purchase of spare parts, purchase of mechanical equipment, etc.

Table 4-2: Breakup of O&M Cost

S.NO.	Item	Amount PKR Million
1.	Spare Parts & Supplies	1.200
2.	Maintenance of Civil Works	1.500
3.	Operational Staff	2.316
	Total	5.016

4.2.1 FIXED O&M

The Fixed O&M Component is assumed as 75% of O&M cost i.e. PKR 3.762 million per annum. This cost is translated in terms of KWh as follows:

S.No.	Item Description	PKR
1.	Fixed O&M – Million per annum	3.762
2.	Fixed O&M - PKR/KWh	0.203

4.2.2 VARIABLE O&M

The variable O&M component is taken at 25% of the total O&M cost i.e. PKR 1.229 million per annum. This cost is translated in terms of KWh as follows:

S.No.	Item Description	PKR Million
1.	Variable O&M – Per annum	1.254
2.	Variable O&M - PKR/KWh	0.068

4.3 RETURN ON EQUITY

The Return on Equity (ROE) has been calculated on the basis of 17% Internal Rate of Return (IRR) as allowed to other hydropower projects.

Total Equity (PKR Million)	104.317
ROE (%age)	17%
ROE per annum (PKR Million)	17.734
ROE (PKR/KWh)	0.958

4.4 RETURN ON EQUITY DURING CONSTRUCTION

ROEDC is calculated on the equity injected for the period before the actual commercial operation date for 3 years based on 17%. This has been allowed to other hydropower plant as well.

Total Equity (PKR Million)	104.317
ROEDC (%age)	17%
ROEDC (PKR/KWh)	0.347

4.5 DEBT REPAYMENT

Following assumptions have been computed for the debt repayment: the repayment is spread over the remaining life of the project.

Table 4-3: Assumptions for calculating Debt Repayment

Total Debt Amount (all figures in PKR Million)	312.951
KIBOR	10.17%
Repayment Period	20 Years
Total Installments	40
Total Payment	738.039
Total Interest	425.088
Total Principal	312.951

Table 4-4: Summary of Debt Repayment

Year	Principal Payment (PKR Million)	Interest (PKR Million)	Total Payment (PKR Million)	Debt Repayment PKR/KWh
1.	5.204	31.698	36.901	1.994
2.	5.747	31.155	36.901	1.994
3.	6.346	30.556	36.901	1.994
4.	7.008	29.894	36.901	1.994
5.	7.738	29.164	36.901	1.994
6.	8.545	28.357	36.901	1.994
7.	9.437	27.465	36.901	1.994
8.	10.421	26.481	36.901	1.994
9.	11.507	25.395	36.901	1.994
10.	12.707	24.195	36.901	1.994
11.	14.033	22.869	36.901	1.994
12.	15.496	21.406	36.901	1.994
13.	17.112	19.790	36.901	1.994
14.	18.897	18.005	36.901	1.994
15.	20.867	16.035	36.901	1.994
16.	23.043	13.859	36.901	1.994
17.	25.446	11.455	36.901	1.994
18.	28.100	8.802	36.901	1.994
19.	31.031	5.871	36.901	1.994
20.	34.267	2.635	36.901	1.994

4.6 CALCULATION BASIS FOR TARIFF

In addition to the facts and assumptions provided in foregoing paragraphs, the following have been taken into account while calculating the tariff. Changes in any of these assumptions could result in an adjustment to Reference Tariff.

- i. Auxiliary load of 1% has been used.
- ii. The Tariff has been calculated based on Annual Net Electrical Output of 18.510 GWh.
- iii. A construction period of 36 months is taken and the same is used for the working of ROEDC and IDC.
- iv. The tariff has been discounted at 10%.
- v. Project financing structure is based on 75:25 debt-equity ratio, although the Project has been entirely funded from PDO sources through ADP-GOAJK.
- vi. IDC and ROEDC have been worked out using the following drawdown schedule:

Period (Years)	Drawdown (%)
1	30
2	30
3	40

- vii. The tariff has been calculated for the period of 30 years starting from the COD.
- viii. Exchange rate are assumed to be 98.81 for reference. Exchange rate variations as per standard EPA shall be accommodated.

- ix. The cost of working capital has not been claimed or included in the project cost.
- x. Any tax on the income of the Company from the sales of electricity to Power Purchaser, general sales tax and all other corporate taxes will be treated as pass-through items.
- xi. The tariff is based on take & Pay, with must run provision.
- xii. Hydrological risk is to be borne by the Power Producer.

4.7 REFERENCE TARIFF TABLE

Summary of the Reference Tariff Levelized for 30 years is shown below:

Table 4-5: Summary of Reference Tariff Table

Reference Tariff Table	
Component of Tariff	Levelized Tariff PKR/KWh
Variable O&M	0.068
Fixed O&M	0.203
Return on Equity	0.958
ROEDC	0.347
Debt Repayment including Interest	1.800
Levelized Tariff	3.377

Table 4-6: Reference Tariff Table for 3.2 MW Rehra Hydropower Plant

Period	Variable O&M	Fixed O&M	Return on Equity	ROEDC	Debt Repayment	Interest Charges	Total
				PKR/KWh			PKR/KWh
1	0.068	0.203	0.958	0.347	0.281	1.712	3.570
2	0.068	0.203	0.958	0.347	0.310	1.683	3.570
3	0.068	0.203	0.958	0.347	0.343	1.651	3.570
4	0.068	0.203	0.958	0.347	0.379	1.615	3.570
5	0.068	0.203	0.958	0.347	0.418	1.576	3.570
6	0.068	0.203	0.958	0.347	0.462	1.532	3.570
7	0.068	0.203	0.958	0.347	0.510	1.484	3.570
8	0.068	0.203	0.958	0.347	0.563	1.431	3.570
9	0.068	0.203	0.958	0.347	0.622	1.372	3.570
10	0.068	0.203	0.958	0.347	0.687	1.307	3.570
11	0.068	0.203	0.958	0.347	0.758	1.235	3.570
12	0.068	0.203	0.958	0.347	0.837	1.156	3.570
13	0.068	0.203	0.958	0.347	0.924	1.069	3.570
14	0.068	0.203	0.958	0.347	1.021	0.973	3.570
15	0.068	0.203	0.958	0.347	1.127	0.866	3.570
16	0.068	0.203	0.958	0.347	1.245	0.749	3.570
17	0.068	0.203	0.958	0.347	1.375	0.619	3.570
18	0.068	0.203	0.958	0.347	1.518	0.476	3.570
19	0.068	0.203	0.958	0.347	1.676	0.317	3.570
20	0.068	0.203	0.958	0.347	1.851	0.142	3.570
21	0.068	0.203	0.958	0.347	-	-	1.576
22	0.068	0.203	0.958	0.347	-	-	1.576
23	0.068	0.203	0.958	0.347	-	-	1.576
24	0.068	0.203	0.958	0.347	-	-	1.576
25	0.068	0.203	0.958	0.347	-	-	1.576
26	0.068	0.203	0.958	0.347	-	-	1.576
27	0.068	0.203	0.958	0.347	-	-	1.576
28	0.068	0.203	0.958	0.347	-	-	1.576
29	0.068	0.203	0.958	0.347	-	-	1.576
30	0.068	0.203	0.958	0.347	-	-	1.576
Levelized Tariff	0.068	0.203	0.958	0.347	0.563	1.238	3.377

Table 4-7: Debt Repayment Schedule (Amounts in PKR Million)

Period	Opening Balance	Total Payment	Principal	Interest	Closing Balance
1	312.951	18.451	2.537	15.914	310.414
2	310.414	18.451	2.666	15.785	307.748
3	307.748	18.451	2.802	15.649	304.946
4	304.946	18.451	2.945	15.506	302.001
5	302.001	18.451	3.094	15.357	298.907
6	298.907	18.451	3.252	15.199	295.655
7	295.655	18.451	3.417	15.034	292.238
8	292.238	18.451	3.591	14.860	288.648
9	288.648	18.451	3.773	14.678	284.874
10	284.874	18.451	3.965	14.486	280.909
11	280.909	18.451	4.167	14.284	276.742
12	276.742	18.451	4.379	14.072	272.364
13	272.364	18.451	4.601	13.850	267.763
14	267.763	18.451	4.835	13.616	262.927
15	262.927	18.451	5.081	13.370	257.846
16	257.846	18.451	5.340	13.111	252.507
17	252.507	18.451	5.611	12.840	246.896
18	246.896	18.451	5.896	12.555	240.999
19	240.999	18.451	6.196	12.255	234.803
20	234.803	18.451	6.511	11.940	228.292
21	228.292	18.451	6.842	11.609	221.450
22	221.450	18.451	7.190	11.261	214.259
23	214.259	18.451	7.556	10.895	206.703
24	206.703	18.451	7.940	10.511	198.763
25	198.763	18.451	8.344	10.107	190.419
26	190.419	18.451	8.768	9.683	181.651
27	181.651	18.451	9.214	9.237	172.437
28	172.437	18.451	9.683	8.768	162.755
29	162.755	18.451	10.175	8.276	152.580
30	152.580	18.451	10.692	7.759	141.887
31	141.887	18.451	11.236	7.215	130.651
32	130.651	18.451	11.807	6.644	118.844

33	118.844	18.451	12.408	6.043	106.436
34	106.436	18.451	13.039	5.412	93.397
35	93.397	18.451	13.702	4.749	79.696
36	79.696	18.451	14.398	4.053	65.297
37	65.297	18.451	15.131	3.320	50.167
38	50.167	18.451	15.900	2.551	34.267
39	34.267	18.451	16.709	1.742	17.558
40	17.558	18.451	17.558	0.893	0.000

5. INDEXATIONS

The following indexation shall be applicable to the tariff.

1. **Indexation applicable to O&M:** The local part of O&M cost will be adjusted on account of Inflation (CPI). The foreign component of O&M shall be indexed to the USD exchange rate variation and US CPI. Quarterly Adjustment for local inflation and exchange rate variation will be made on 15th July, 15th October, 15th January & 15th April respectively on the basis of the latest available information with respect to CPI (notified by the Federal Bureau of Statistics).
2. **Adjustment for KIBOR variation:** the interest part of debt service will remain unchanged throughout the term except for the adjustment due to variation in – month KIBOR, according to the NEPRA's already determined formula.

6. REQUEST SOUGHT

In the circumstances and light of the facts and ground stated above it is respectfully prayed that instant proposal may kindly be accepted with the project cost and the resultant levelized tariff of PKR 3.377/KWh.

The tariff proposal is requested to be forwarded to NEPRA for the determination of the tariff within the time mentioned under the Import of Power Regulations, 2017.