BEFORE
THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

TARIFF PETITION

BY: ENERTECH BOSTAN SOLAR (PRIVATE) LIMITED

RE: 50MW SOLAR PHOTOVOLTAIC (PV)POWER GENERATION FACILITY AT BOSTAN, DISTRICT PISHIN, BALOCHISTAN

DATED:29-01-2019

Legal & Regulatory Consultant

RIAA Barker Gillette
191-A Shami Road, Lahore Cantt
Tel: 042-111-LAWYER (529-937)
Email: hasnain.naqvee@riaabg.com
Web: www.riaabarkergillette.com

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A. PARTICULARS OF THE PETITIONER

Name:	Enertech Bostan Solar (Private) Limited (the "**Petitioner**")
Address:	Office No. 712, 7th Floor, Al-Hafeez Business Centre, 89-B/III, Gulberg-III
Phone:	*042-35772778-9*
Facsimile:	-
E-mail:	[*yasser.malik@enertech.com.pk*]

Certified copies of the Memorandum of Association, Articles of Association and Certificate of Incorporation of the Petitioner are appended herewith as **Annex A.**

B. AUTHORISATION

This tariff petition (the "**Petition**") is being filed and submitted before the National Electric Power Regulatory Authority ("**NEPRA**" or "**Authority**") by Yasser Malik, Chief Executive Officer of the Petitioner, being the duly authorized representative of the Petitioner by virtue of board resolution dated December 8th, 2017 (enclosed herewith as **Annex B.**

C. PETITIONER'S REPRESENTATIVES

Yasser Malik Chief Executive officer Petitioner] (***Authorized Representative***);

1. Yasser Malik, CEO of the Petitioner (***Authorized Representative***); and
2. RIAA Barker Gillette (***Legal & Regulatory Consultants***).

D. PROCESSING FEE

A Payment Order bearing number: 6477826 in the sum of **PKR 651,904/-** (Pakistan Rupees Six Hundred and Fifty One Thousand Nine Hundred and Four), being the applicable fee for this Petition, as determined by the Authority is enclosed herewith as **Annex C.**

E. VERIFICATION THROUGH AFFIDAVIT

As required under the National Electric Power Regulatory Authority (Tariff Standards and Procedure) Rules, 1998 (the "**Rules**"), an affidavit verifying the statement of fact or opinion made by the Petitioner in this Petition is enclosed herewith as **Annex D.**

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F. **PROJECT SUMMARY**

Project Company	Enertech Bostan Solar (Private) Limited
LOI	Letter of Interest dated 26.10.2016 (bearing reference no. BPDP/S-730/2016) issued by the BPDB[*as amended through letters dated*6.09.2018 *(beoring reference no. ED SO/E/3-16/2018/1362-63* **Annex E**
Main Sponsors	EnerTech Holding Company (Kuwait)
Current Shareholders	Enertech Pakistan 100%
Project Capacity	50MW (at site operating conditions)
Project Location	Bostan, District Pishin, Balochistan
Land Area	250 Acres
Concession Period	25 years from Commercial Operations Date ("COD")
Auxiliary Consumption	300 KW
Project Basis	BOOT
Energy Purchaser	Central Power Purchasing Agency (Guarantee) Limited ("CPPA(G)")
PV Module	Poly Crystalline PV modules
laverters	Huawei Sun2000 90KTL
Capacity Factor	21.70%
Construction Period	12 Months
EPC Contractor	HYDROCHINA INTERNATIONAL ENGINEERING COMPANY LIMITED
Annual Energy Generation	95.081 GWH
Project Cost	USD 46.357- Million
EPC Cost	USD 40.135- million
Debt to Equity Ratio	80:20
Financing	50% Local Debt &500% Foreign Debt

Operational Phase Cost

Description		**Year [1] Million US $**	**Year [1] Million PKR**
Operations Cost	**O&M**	**900,000/-**	**120.6**
	Insurance		**26**
Total		**1,099,225/-**	**147**

Terms of Financing

Currency	**US$**	**PKR**
Debt Composition	**50%**	**50%**
Debt Term	**15 years**	**12 years**
Grace Period	**1 year**	**1 year**
Repayment Period	**14 years**	**11 years**
Interest Rate (Libor)	**2.68%**	**2%**
Margin Over Libor	**4.25%**	**3.50%**

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Return on Equity	**15%**
Lead Arrangers	**United Bank Limited (UBL)**
Exchange Rate	**134/-**
Levelized Tariff	**6.4463US Cents, PKR 8.6380**
Legal Counsel	RIAA Barker Gillette
Owner's Engineer	**ILF Germany**
Financial Advisor	**None**
Project Documents	(a) Generation License: Please see paragraph Annexure F (b) Implementation Agreement: To be negotiated and finalized. (c) GOP Guarantee: To be negotiated and finalized. (d) Land for Project: Please see paragraph Annexure IE (e) Energy Purchase Agreement: To be negotiated and finalized. (f) Financing Documents: To be negotiated and finalized. (g) Security Documents: To be negotiated and finalized. (h) Construction Contract: Please see Annexure G (i) Supply Contract: Please see Annexure G.. (j) O&M Agreement: Attached with EPC (k) Insurance: To be negotiated and finalized.
Relevant Policies	(a) Balochistan Power Generation Policy, 2007; (b) Policy for Development of Renewable Energy for Power Generation 2006; and (c) Alternative and Renewable Energy Policy, 2011. (the aforesaid policies shall collectively be referred to as the "**Policies**".)

G. GENERATION LICENSE STATUS

The Petitioner submitted an application dated 21.05.2018 before NEPRA for grant of a generation license for the Project (defined below). The said application has been admitted by the Authority, as evidenced through the notice of admission dated 07.07.2018 available on NEPRA's website For the sake of expediency, the contents thereof (along with the annexes thereto) shall be read as an integral part of this Petition. A copy of the Petitioner's aforesaid application for grant of a generation license is appended herewith as **Annex F**.

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H. TARIFF PETITION – GROUNDS & FACTS

1. INTRODUCTION

1.1 RATIONALE FOR SOLAR POWER

1.1.1 Pakistan's Current Electric Power Shortage

Pakistan currently has around 23.531 (2013-14) GW of installed capacity for electricity generation. Conventional thermal plants (oil, natural gas, coal) account for 64.4% of Pakistan's capacity, with hydroelectricity making up 30.70% and nuclear 4.90%.

Pakistan's huge energy crisis is jeopardizing its economic progress and social development. The major reasons for the energy crises are the lack of investment in Power Sector in the past, non-development of renewable energy sector i.e. Hydel, Wind & Solar etc and the depleting Oil & Gas reserves. It is imperative for Pakistan to look for indigenous/cheap energy resources for sustainable growth through self-reliance.

One of the utilizable resources in the short term is solar power generation. Although it is a new technology in Pakistan, it has a proven track record globally and is recognized as a commercially viable technology. With over 227 GW installed capacity around the globe and over 17.2 GW of installed capacity in India and China alone, the case for development of solar energy in Pakistan is very strong.

1.1.2 Solar Power Projects – A Natural Choice

To ensure a sustainable energy future for Pakistan, it is necessary that the energy sector be accorded a high priority. It is considered that solar power generation could become a significant contributor to Pakistan's electricity supply in the near future. The development of solar generation projects supports the environmental objectives of the Government of Pakistan by:

(a) reducing dependence on fossil fuels for thermal power generation;

(b) increasing diversity in Pakistan's electricity generation mix;

(c) reducing greenhouse gas emissions through the avoidance of thermal power generation; and

(d) helping in reduction of the exorbitant trade deficit.

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1.1.3 Solar Power Project – Advantage of Solar Power in the region

Balochistan is one of the least developed Province in Pakistan. Enertech Bostan Solar is the first IPP being installed in the province since the 1999. EnerTech Holding company signed a Government to Government MOU committing to develop and install 500 MW of solar power in Balochistan at the load centers.

Balochistan currently faces a supply deficit of almost one gigawatt as the transmission infrastructure is unable to cater to the local demand due to large distances and minimal investment on the transmission and distribution networks. The transmission and distribution losses in Balochistan are the highest in the country.

The 50 Mw power plant will provide power to The Quetta city and the adjoining areas of Quetta, Pishin, Bostan and Kuchlak District. It will be the only local source of power other than Habibullah coastal thermal power project which was setup in 1999. The power plant will not only provide cheap electricity but also improve the overall Grid in the region and improve the voltage levels.

1.1.4 The Solar Power Generation Potential & Government of Pakistan's Support

The solar energy potential of 2.9 million MW in the country is estimated by National Renewable Energy Laboratory, USA. Pakistan being in the sunny belt is ideally located to take advantage of the solar energy technologies. This energy source is widely distributed and abundantly available in the country with about 2500-3000 sun shine hours and 1.9 - 2.3 MWh per m2 per year. It has an average daily global insulation of 19 - 20 MJ/m2 per day with annual mean sunshine duration of 8 to 8.5 hours a day. These values are among the highest in the world. For daily global radiation up to 23MJ/m2, 24 (80%) consecutive days are available in this area. If harnessed adequately, solar energy would eradicate energy shortages in the country. The Government of Pakistan is currently looking to build solar farms in the high solar irradiance areas.

The Government of Pakistan has clearly articulated its support for the development of renewable energies. Due to the fact that solar energy is one of the most economical and efficient of renewable energy production techniques, the focus is on supporting the development of solar farms through independent power producers (**the Solar IPPs**).

Applicable Law & Policy

1.1 Under the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (as amended, the "**NEPRA Act**"), the Authority is mandated to determine tariffs and

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other terms and conditions for the supply of electric power services by the generation, transmission and distribution companies.

1.2 This Petition is being filed before the Authority pursuant to Rule 3 of the NEPRA (Tariff Standards and Procedure) Rules, 1998 (including all amendments thereto), read with, *inter alia*, the NEPRA (Benchmarks for Tariff Determination) Guidelines, 2018, all enabling provisions of the NEPRA Act and the applicable provisions of the Policies for the Authority's determination of tariff in relation to the Petitioner's photovoltaic solar power generation facility of approximately 50MWp to be located at Bostan, District Pishin, Balochistan(the "**Project**").

1.3 The Government of Pakistan and Government of Balochistan have formulated the Policies to standardize and encourage the participation of the private sector in the development and application of renewable energies. Organizations such as the Alternative Energy Development Board ("**AEDB**") and Balochistan Power Development Board ("**BPDB**") have been established to facilitate the implementation of renewable energy projects. The Government of Balochistan has been making significant efforts through the Department of Energy and BPDB for development of projects within Balochistan and have issued several letters of interest under the Balochistan Power Generation Policy, 2007.

1.4 The Letter of Interest for the development of the Project was issued by BPDP on 26.10.2016 (bearing reference no. BPDP/S-730/2016) [*and further revised and extended through letters dated 18.01.2017 (bearing reference no. ED/SO(A/E)3-16/2016/85-87) and dated 6.09.2018 bearing reference no: ED SO/3-16/2018/1362-63.*

1.5 Pursuant to the LOI, the Petitioner is required to achieve the milestones set out therein within the specified time periods (including the submission of this Petition before the Authority). We are pleased to confirm that the Petitioner has diligently pursued the development of the Project in accordance with the Policies and has achieved majority of the milestones (as further detailed herein below) and summarized as follows:

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Milestone / Activity	Status
Bank Guarantee for LOI	Submitted
Valid LOI	Issued
Incorporated the Petitioner as the special purpose vehicle	Completed
Initial Environmental Examination	Completed
Approval of the Initial Environmental Examination	26.12.2017
Grid Interconnection Study	Completed
Approval of Grid Interconnection Study	Last stage of approval at NTDC
Feasibility Study	Completed
Approval of Feasibility Study	17.05.2018
Application for generation license	07.07.2018
Topograpgical Study and Hydrological Study	Completed
Transportation Studies	16-07-2016
Possession of Land / Execution of Sub-Lease	In process of being Executed

1.6 The Petitioner has already made significant progress in relation to the Project and the anticipated timelines of upcoming milestones are as follows:

Milestone / Activity	Status
Issuance of Letter of Support	2 weeks from Award of Tariff
Execution of Energy Purchase Agreement	4 months from Issuance of LoS
Execution of Implementation Agreement	4 months from Execution of LoS
Execution of Financing Documents	4 Months from Execution of LoS
Achievement of Financial Close	3 months from Execution of EPA
Commercial Operations Date	15TH November 2020

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Sponsor's Introduction

1.7 The Project is sponsored by EnerTech Holding Company (the "**Sponsor**"), a fully-owned subsidiary of National Technology Enterprises Company ("**NTEC**"), which in turn is a fully-owned subsidiary of Kuwait Investment Authority ("**KIA**"):

(a) **KIA:** Kuwait Investment Authority is an autonomous government body and sovereign wealth fund responsible for the management and administration of the General Reserve Fund (GRF), and the assets of the Future Generation Fund (FGF), as well as any other funds entrusted to it by the Minister of Finance for and on behalf of the State of Kuwait.

(b) **NTEC:** National Technology Enterprise Company was established by an act of the Kuwait council of ministers as a fully owned subsidiary of KIA. NTEC was formed to invest in technology sector to address its core mandate i.e. technology and knowledge transfer. NTEC manages its mandate through specialized wholly owned subsidiaries.

1.8 The Sponsor is mandated to:

(a) Build platforms to facilitate the transfer of technology in energy, clean-tech and water sectors, to develop technical skills of the country's populace and bring innovation in the use of technology;

(b) Initiate and take a lead management role in its own green field projects in energy, clean-tech, water, environment and renewable energy, to develop the country's economy, create jobs, and strengthen and diversify the national GDP; and

(c) Make strategic investments in the energy sector in jurisdictions with which the State of Kuwait enjoys brotherly relations.

1.9 The Sponsor's leadership team is globally recognized in the fields of renewable energy technology and project development and finance. Its portfolio companies have been involved in the development of numerous pioneering solar technologies including Photovoltaic (PV), Concentrated Photovoltaic (CPV) and Concentrated Solar Power (CSP), PV trackers, as well as breakthrough energy storage technologies, and high-dispatch-ability and high-capacity factor solar solutions. In addition, our team has

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substantial experience working with a variety of solar panels including high efficiency CPV, mono-crystalline, poly-crystalline and thin film panels.

1.10 The Petitioner is focused on delivering customized solutions that minimize the levelized cost of energy (LCOE) and maximize project returns. The Petitioner's Chief Executive Officer is Mr. Yasser Malik, who advises several renewable IPPs and has successfully raised financing for energy projects in Mexico, Pakistan, Middle East and Africa. He has overseen renewables installations across the entire chain of execution from technical partnerships to fund raising. Before working in renewables, he was responsible for the Strategic Solutions Group covering Central Eastern Europe, the Middle East and Africa (CEEMEA) at the Bank of America Merrill Lynch.

1.11 The Sponsor is currently the legal and beneficial owner of one hundred percent (100%) of the shareholding in the Petitioner. However, please note that pursuant to the Balochistan Power Generation Policy, 2007, the Statement of Conditions (defined below), the Master Lease (defined below) and the Sub-Lease (defined below), five percent (5%) of the shareholding in the Petitioner will be transferred to Balochistan Energy Company Limited ("**BECL**") and maintained for the construction and operations phase of the Project.Please note that BECL is a special purpose vehicle wholly owned by the Government of Balochistan incorporated with the intention to assist in the development of solar photovoltaic generation facilities in Balochistan, including the Project.[*An agreement covering the aforementioned shareholdingarrangement is currently being discussed and negotiated with BECL and the Government of Balochistan. A copy of the same can be submitted to NEPRA upon its execution, if required.*]

Project Development Activities / Approval of Relevant Studies

1.12 The Petitioner has fully complied with the provisions of the LOI and has, till date, submitted monthly progress reports to BPDB in accordance with the provisions thereof (copies enclosed herewith as **Annex E**). Furthermore, the Petitioner has carried out detailed studies for the development of the Project, as set out below.

1.13 **Feasibility Study:** The Petitioner engaged Kinetic Renewable Energy Services DMCC on10.11.2017 for preparation of a feasibility study for the Project. The complete feasibility study regarding the Project was submitted to Government of Balochistan Energy Department Renewable Energy Wing through the Petitioner's letter dated 15.12.2017. The said feasibility study has been approved by [*BPDB in consultation with AEDB's panel of*

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experts] through letter dated 17.05.2018 bearing reference no. ED/SO9A/E/3-16/2018/1228-30 (copy enclosed herewith as Annex 1A.

1.14 **Grid Interconnection Study:** The Petitioner engaged Power Planners International on10.05.2017 for conducting the grid interconnection study for the Project. The completc grid interconnection study regarding the Project was submitted to NTDC through CPPA G and is in the last stages of approval, expected to be approved by first week of February 2019.

1.15 **Initial Environmental Assessment**: The Petitioner engaged Geological and Environmental Management Services (GEMS] on 09.12.2016 for carrying out the initial environmental assessment in relation to the Project. The complete environmental study regarding the Project was submitted to Government of Balochistan Environment Protection Agency through letter dated 13.09.2017 . The said environmental study has been approved by to Government of Balochistan Environment Protection Agency through letter dated 16.11.2017 bearing reference no. DG(EPA0/4926-27/2016-17(copy enclosed herewith as **Annex 1B.**

1.16 Topographical Survey: The petitioner engaged Cameos Consultants on to conduct the topographical survey of the project land. The complete topographical report was used to ensure the most optimum design and lowest LCOE.

1.17 Hydrological Study: The site of the power plant is close to the m

1.18 mountains with few seasonal water tributaries passing through the site. For this reason, a detailed hydrological study was commissioned by the petitioner. Cameos Consultants were awarded the contract to conduct the study and to provide the ideal design for flood management and rerouting of the water tributaries through the site. The study was completed in 2017. **(Annexure IE)**

Project Timeline

As provided above, the Petitioner aims to achieve financial close of the Project by 3 Months of execution of EPA with the anticipated commercial operations date of November 15th 2020.

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2. PROJECT DETAILS

2.1 Project Land &Location

The Project site is located at approximately 35km from Quetta City on the Kuchlak-Zhob Highway. The land is vacant with self-grown small shrubs and bushes and there is currently no agricultural activity or human settlement on the Project site. The satellite map of the plant location, its coordinates and transportation survey drawing are enclosed herewith as **Annex1-C**

In exercise of powers conferred by Section 10(2) of the Colonization of Government Lands Act, 1912, as applicable to the province of Baluchistan, the Senior Member, Land Utilization Department, Board of Revenue, Balochistan issued the statement of conditions no. 53/LU/2018/6278-83 dated 23.04.2018 (copy enclosed herewith as **Annex1-D**, the "**Statement of Conditions**") in relation to the execution of the Master Lease (defined below) and Sub-Lease (defined below).

Pursuant to the Statement of Conditions, the Board of Revenue (Balochistan) through the Deputy Commissioner / Collector, District Pishin executed a Master Lease dated 07.05.2018 with BECL (the "**Master Lease**").

[***Please note that BECL is currently in the process of procuring the aforesaid approval from the Government of Balochistan, upon issuance of which, BECL and the Petitioner shall execute the Sub-Lease for the land required for the Project. A copy of the same can be submitted to NEPRA upon its execution, if required.***]

Project Technology, Power Generation& Other Relevant Details

2.2 The Project details are as provided below:

1)	Total PV Installed Capacity of Generation facility	50 MWp
2)	Average sun hour availability /day (Irradiation on Inclined surface)	6.0 Hrs
3)	Days per Year	365
4)	PV Plant Annual Generation Capacity	95.081 GWH
6)	Generation per Year if Plant operational 24/7	438.161 GWH
7)	Net Capacity Factor	21.70%

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The project technology chosen is fixed tilt with poly crystalline solar PV and string inverters. The project will be the first smart PV project in Pakistan and expected to provide one of the best efficiencies in the region. Fixed tilt technology was preferred over tracking as this is the first project in the and there is significant need of capacity building in the region. The expected operations and maintenance costs for a tracking project in the region will be very high and not lead to any advantage in the overall cost of energy.

The technical details of the power plant are provided below:

(A). Solar Power Generation Technology & Capacity

(i).	Type of Technology	Poly Crystalline Photovoltaic (PV) Cell
(ii).	System Type	Grid Connected
(iii).	Installed Capacity of Solar (MW)	50 MW_p

(B). Technical Details of Equipment

(a).	**Solar Panels – PV Modules**	
(i).	Type of Module	Poly Crystalline PV modules Canadian Solar CS3U-340P
(ii).	Type of Cell	Poly Crystalline
(iii).	Dimension of each Module	2000mm x 992mm x 40mm
(iv).	No. of Panel/ Modules	147,060
(v).	Total Module Area	291,743m^2
(vi).	Total Land Area Used	250 Acres
(vii).	Frame of Panel	Hot Dip Galvanized Steel

(viii).	Weight of one Module	22.6 Kg
(ix).	Module Output Warranty	25 years Warranty for depreciation not more than 0.5 %
(x).	Number of Solar Cells in each module	144 Half Cells
(xi).	Efficiency of module	17.14%
(xii).	Environment Protection System	Encapsulation and sealing arrangements for protection from environment.
(xiii).	Maximum Power (P_{max})	340W_P
(xiv).	Voltage @ (P_{max})	38.4V
(xv).	Current @ P_{max}	8.86A
(xvi).	Open circuit voltage (V_{oc})	45.9V
(xvii).	Short circuit current (I_{sc})	9.36 A
(xviii).	Maximum system open Circuit Voltage	1500V
(b).	**PV Array**	
(i).	No. of Sub-arrays	2
(ii).	Modules in a string	30
(iii).	Total No. of Strings	4902 (30X2)
(iv).	Total Modules	147,060
(c).	**PV Capacity**	
(i).	Total	50 MWp

(d).	**Inverters**		
(i).	Capacity of each unit	90 KW	
(ii).	Inverter Model	Sun2000 90KTL	
(iii).	Manufacturer	Huawei	
(iv).	Rated Input Voltage	1080V	
(v).	Input Operating Voltage Range	600-1450 V	
(vi).	Number of Inverters	464 units	
(vii).	Total Power	39.44 MW AC	
(viii).	Efficiency	99% (Euro: 98.4%; CEC:98.5%)	
(ix).	Max. Allowable Input voltage	1000V	
(x).	Max. Current	3104A	
(xi).	Max. Power Point Tracking Range	0~1422 KW	
(xii).	Output electrical system	AC	
(xiii).	Rated Output Voltage	85V	
(xiv).	Rated Frequency	50 Hz	
(xv).	Power Factor	Adjustable 0.9 Induction to 0.9 Capacitance	
(xvi).	Power Control	MPP Tracker	
(xvii).	Environmental Enclosures	Operating Temperature Range	-25° C to 62° C

		Relative Humidity	15% - 95% non-condensing
		Audible Noise	<61 dB(A)
		Operating Elevation	<2000 m
		Warranty Period	10 Years
(xvii i).	Grid Operation Protection	(a).	DC circuit breaker
		(b).	AC circuit breaker
		(c).	DC overvoltage protection
		(d).	Lightning protection level III
		(e).	Grid monitoring
		(f).	Insulation monitoring
		(g).	Anti-Islanding
(e).	**Junction Boxes Installed and fixed on main steel structure in Array Yard.**		
(i).	Number of Junction Box units	232	
(ii).	Input circuits in each box	16	
(iii).	Max. Input current for each circuit	10 A	
(iv).	Max. Input voltage	1000 V	
(v).	Power at each box	99.2 KW	
(vi).	Protection Level	IP 65	

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(vii).	Over-Current protection	Fuse	
(viii)	Output switch	125A, 1000V disconnector	
(ix).	Surge protection	1500V, Type II	
(x).	Purpose of Junction Box	(a).	To provide Isolation of Sub Arrays
		(b).	In case of fault provide arrangement for disconnection of each of the Sub-Arrays or Strings.
		(c).	To ensure safety of the electric works in the Solar Module Arrays
		(d)	Protection from back flow of short circuit current through use of semi-diodes.
		(e)	To combine groups of strings into Sub-Arrays that will be wired into the Inverter
(f).	**Data Collecting System**		
(i).	Weather Data	(a).	data collected for Direct Solar Radiation (W/m^2) using two Li-COR Pyranometer installed with the NRG Symphonies Plu3 Data Logger at the site

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		(b).	data collected for Temperature (0°C) using NRG 110s Sensor attached to the Solar Resource Assessment Equipment
		(c).	data collected for Rain in mm/m^2 using Rain Sensor attached to the Solar Resource Assessment Equipment
		(d).	data collected for Wind Speed (ms-1) using Wind Speed Sensor attached to the Solar Resource Assessment Equipment
		(e).	data collected for Wind Direction (deg) using Wind Vane Sensor attached to the Solar Resource Assessment Equipment
(ii).	System Data	(a).	DC input voltage (V), Current (A) of each module, string, sub array & Inverter
		(b).	Total Sub Array Power Generated and Inverter Power
		(c).	AC output voltage (V) and current (A)

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			of each inverter (Phase, total)
		(d).	AC Output power (kW) and Energy (kwh) of each inverter
		(e).	Frequency (Hz)
		(f).	Power Factor (PF)
		(g).	Temperature inside inverter station
(g).	**<u>Isolating Transformer</u>**		
(i).	Rating	132KV/33KV 1260/630-630KVA	
(ii).	Type of Transformer	Box Type Oil Immersed	
(iii).	Input voltage	3150V	
(iv).	Output Voltage	132kV	
(v).	Purpose of Transformer	Step Up Voltage, Galvanic Isolation and Eliminate DC Current Injection	
(vi).	Efficiency	98.89%	
(h).	**<u>Outdoor Cubicle Control Room</u>**		
(i).	Data record	Data Logging using software and hardware provided by Huawei	
(ii).	Control Room System	Computerized Data Monitoring and communication systems	

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		using latest Satellite Technology
(iii).	Control room System Detail	Interfacing, Hardware and Software, suitable for such Multi-MW systems
(i).	**Mounting Structure**	
(i).	Structure	HDG Steel
(ii).	Tilt of Array Frame	27 Degrees
(iii).	Array Specification	Designed and Certified for Wind Speed and Seismic Requirements.
(j).	**Foundation Pillars**	
(i).	No. of Foundations	31,863
(ii).	Foundation Structure	Ground Screw

EnerTech has awarded a turnkey EPC contract to Power Construction Corporation of China Limited dated November 16,2018. The EPC company was chosen based on comprehensive evaluation of the technical and commercial aspects of the bid, experience of the contractor and their ability to work in the Province.

2.3 The Project will supply 95,081MWh of energy to the Quetta Electric Supply Company Limited in its first year. This will be the first dedicated source of power generation for Balochistan after the Habibullah Coastal Power Plant which was established in 1999. As the Project uses a renewable source of energy (the sun), it will displace 66,821 metric tons of carbon every year. This is equivalent to the carbon sequestered by 63.253 acres of forests in one year or 7,518,920 gallons of petrol consumed.

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2.4 The Project will supply electricity to almost 20,000 homes in the regions of Quetta and Pishin and the Petitioner will also create employment opportunities for locals both during the construction phase and the operations phase of the Project.

3. ENGINEERING, PROCUREMENT & CONSTRUCTION ("EPC") CONTRACTS

EPC CONTRACT ATTACHED (ANNEXURE G)

Initial Works aad Appointment of Owner's Engineer

3.1 The Petitioner has already completed the following initial works:

3.2 Completion of feasibility study approved by the panel of experts, including topographical and hydrological studies for completion of detailed engineering.

3.3 The Petitioner has also selected and contracted **ILF Germany** as the independent owner's engineer who shall act as the technical representative of the Petitioner for the Project.

Selection of EPC

3.4 The Selection of EPC was managed through the internal guidelines of EnerTech Holding Company and Kuwait Investment Authority (under the laws of Government of Kuwait), adaption of NEPRA guidelines for selection of Engineering, Procurement and Construction Contractor by independent Power Producer, 2017 where possible and keeping in view the sensitive nature of the region.

3.5 The following Documents were prepared and approved by the EnerTech Holding Company Board. The same were published on the website of EnerTech Holding Company and distributed to the approved EPC contractors of EnerTech Holding Company.

(a) Request for proposal (containing the description of the Project, scope of work, overview of the bidding process and the bid evaluation criteria);

(b) EPCC term sheet (containing the key legal, financial and technical terms of the EPC contracts); and

(c) Forms of the Construction Contract and Supply Contract.

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3.6 Security Clearance

A comprehensive review of the approved EPC contractors was completed to ensure that they can receive security clearance for the completion of work. The major aspects of security clearance were:

(a) A review of the eventual ownership of the company
(b) A review of the board of directors and management of the company

(c) A review of the company's operations in various countries and operating teams designated for the project.

(d) A security clearance letter from the respective embassies of the country allowing them to travel in Balochistan and perform the works

(e) Input from the security agencies with respect to the key individuals of the companies

Based on the review by EnerTech Holding internal team and feedback from the relevant institutions in Kuwait and Pakistan, EnerTech shortlisted three companies.

3.7 Review of Proposals:

The proposals of the three companies were reviewed based on the following criteria:

(a) Technical capabilities of the companies and previous projects
(b) The technical proposal provided for the project
(c) Ability to complete the project under the timelines allowed by NEPRA
(d) Past experience of working in Pakistan and understanding of the regulatory environment, including coordination with various departments including NTDC/ DISCOS
(e) Ability to complete projects in logistically difficult areas such as Balochistan
(f) Total quoted cost of the project and the levelized cost of energy
(g) Ability to manage Operations and Maintenance of the project over long run

Based on the above review,

EnerTech finally chose Power China Corporation of China Limited as the preferred EPC contractor and their subsidiary, Hydro China Engineering Company Limited for the construction part of the project.

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Power China was chosen because of their depth of experience in Pakistan, their demonstrated ability to work in various areas of Pakistan and their understanding of the local environment including the security environment of Balochistan. It is also pertinent to note the overall comfort of all stakeholders, with Chinese state-owned enterprises in the province of Balochistan as they are already developing various projects under the CPEC platform.

3.8 Award of EPC contract

After the approval of the tender by Power China, EnrTech and Power China signed a term-sheet in December 2017.

Post the signing of the Term Sheet, the petitioner and the EPC contractor were involved in a comprehensive review survey and negotiations to finalize the EPC contract.

The activities included a detailed survey of the site including discussions with the Chinese Embassy on part of the EPC contractor and the local/ federal authorities to develop a workable security plan including provision of security on the site, people and during logistics of the plant and machinery through Balochistan

Significant meetings took place between March 2018- October 2018 to finalize the technical and commercial aspects of the EPC contracts and the EPC contracts were finalized and executed on 16th November, 2018.

4. PROJECT FINANCIALS & KEY FACTORS OF CALCULATION

Capital Structure

4.1 Based on a Project Cost of USD 40.0 million, details of which are provided in the following sections, the Project will be funded on the basis of a debt to equity ratio of 80:20. In light of this, the proposed capital structure of the Project is outlined below:

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Description	Million (USD)
Equity	**9.27**
Foreign Debt	**18.32**
Local Debt	**24.55 (PKR)**
Project Cost	**46.36**
Debt : Equity Ratio (based on initial discussions with lenders)	**80:20**

Key terms and conditions of financing are provided in the table below:

Local Debt:

Description	Key Term
Base Rate	**2.0%**
Spread	**3.50%**
Total Rate	**5.50%**
Repayment Period	**11 years**
Repayment Basis	**Quarterly**

Foreign Debt:

Description	Key Term
Base Rate	**2.68 %**
Spread	**4.25%**
Total Rate	**6.93%**
Repayment Period	**14 years**
Repayment Basis	**Quarterly**

The Petitioner will actively procure the relevant approvals from the State Bank of Pakistan in relation to the aforementioned financing facility and its terms.

The petitioner has provide various term sheets it received from local lenders as well ads multilaterals for the project. The terms used for the calculation are based on the

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assumptions provided by NEPRA and the petitioner is actively engaged with all lenders to negotiate terms at least equivalent to those advised by NEPRA.

Project Cost

4.2 The total Project Cost, expressed in United States Dollars, has been calculated after thorough analysis, evaluation and understanding of the dynamics that affect the development, construction and operation of a solar PV power plant. The breakup of the Project Cost is summarized as follows:

		USD (million)
1	Total EPC	**40.135**
2	Total Non-EPC Works	**1.513**
3	Total Development Costs	**41.358**
4	Insurance During Construction	**0.200675**
5	Financing Fees & Charges	**0.916145**
6	Interest During Construction	**0.781472**
7	Security Cost During Construction	**0.4**
8	Cost of Land	**0.458597**
9	**Total Project Cost**	**45.859720**

4.3 A reference PKR/USD exchange rate of **134.00** has been assumed for the purpose of this Petition.

Project Cost Details

4.4 **EPC Cost:** As submitted herein above, the EPC cost has been finalized after a competitive bidding process carried out in accordance with the Guidelines. The EPC cost is split into an offshore and onshore portion as follows:

(a) Offshore Supply Contract: USD 30,631,000; and
(b) Onshore Construction Contract: USD 9,504,000.

4.5 **Non-EPC Cost:** The non-EPC Cost has been calculated as USD **1.408073** Million. The details in relation to such costs are provided in the following table:

		USD million
1	Project Land & Development	**0.458073**
2	Administration office and staff accommodation	**0.20**
3	Project Vehicles	**0.20**
4	Security	**0.40**
	TOTAL	**1.258073**

4.6 **Project Development Costs:** These typically consist of costs incurred by the Sponsors during the development of the Project up to COD. These have been estimated at USD **0.912999** million and a detailed budget for these costs is presented below:

		USD million
1	Feasibility & Other Technical Studies	**0.12**
2	Owners' Engineer	**0.15**
3	Legal, Financial and Insurance advisors	**0.18**
4	Legal & Regulatory Fees	**0.05**
5	Costs incurred for Petitioner's incorporation and capitalization	**0.023**
6	Human resource cost	**0.33**
7	Travel and related cost	**0.21**
	TOTAL	**1.063**

4.7 **Construction Period Insurance:** Under the turnkey EPC arrangement, the Petitioner has agreed to a construction period of **10** months. Insurance during the same has been estimated at **0.5%** of the EPC Cost for a total sum of USD **200,675** and covers **Fire & Hazard, Terrorism, Marine cover, EAR &CAR.**. The Petitioner, in accordance with the typical requirements set out by its prospective lenders or energy purchaser, intends to procure the following insurances during the construction phase of the Project:

(a) Fire & Hazards
(b) Terrorism
(c) Marine Cover
(d) Equipment Associated Risk
(e) Construction Associated Risks.

Lenders' Fees & Charges: Under the proposed financing structure, the debt will form 80% of the total Project cost mentioned above. **100%** of the debt is anticipated to be arranged through **United Bank Limited** as reflected through the **Term sheet attached as**

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Annexure H, which shall include costs related to the debt financing of the Project. Such costs include, *inter alia,* the lenders' up-front, arrangement and commitment fee, charges related to various letters of credit to be established in favor of various contracting parties ([*other than letter of credit confirmation charges*]), fees payable and stamp duty applicable on the financing documents, agency fee, security trustee fee,monitoring fee and the fees for the lenders' various advisors. These have been estimated at approximately **2.50%**% of the debt amount

4.8 **Interest During Construction:** This has been calculated on the basis of 6.93% . The same has been calculated at USD 0.942 million and is based on an interest rate of 6 Months Libor for Foreign Debt. For Local Debt SBP financing facility will be utilized with base rate of 2% and 3.50% spread over base rate and calculated at PKR 99.5 Million

4.9 Duties and Taxes:

(a) Custom Duty: Rules regarding customs duty on renewable energy projects are driven based on the information provided under the RE Policy and the Government of Pakistan, Federal Board of Revenue Statutory Regulatory Order (**SRO**) No. 575(I)/2006 dated June 05, 2006.

Following table highlights and summarizes the fiscal incentives/exemption available to renewable energy based power Projects regarding customs duty:

Fiscal Incentives/Exemptions on RE Based Power Projects

Extract from Para 8.6.1	**Para 13 (0% customs duty)**
No customs duty or sales tax for machinery equipment and spares (including construction machinery, equipment and specialized vehicles imported on temporary basis) meant for initial installation or for balancing, modernization, maintenance, replacement, or expansion after commissioning of Projects for power generation utilizing renewable energy resources (specifically, small hydro, wind, and solar), subject to fulfillment of conditions under the relevant SRO	Machinery, equipment and spares for initial installation, balancing, modernization, replacement or expansion of Projects for power generation through nuclear and renewable energy sources like solar, wind, micro-hydel bio energy, ocean, waste-to-energy and hydrogen cell etc.

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The Petitioner has assumed 0% customs duty regarding imported plant, equipment, machinery etc. in accordance with Para 13 of the SRO read with the Policy.

However, in case of applicability of any duty, the Petitioner prays NEPRA to allow adjustment of capital cost of the Project and the tariff, in each case, for actual customs duty paid, at COD.

(b) Special Excise Duty: Special Excise Duty is assumed at 0%, as the same is correlated with the rate of customs duty (assumed 0%). In case the Project has to pay customs duty then the Special Excise Duty at 1% is leviable. Accordingly, the Petitioner prays NEPRA to allow adjustment of capital cost of the Project and the tariff, in each case, for actual customs duty paid, at COD.

(c) Sales Tax: No Sales Tax is assumed on import and local supply of the imported plant, equipment, and machinery etc., based upon the SRO and recent Notification SRO 575(I)/2006 issued by the Government of Pakistan, Federal Board of Revenue.

Furthermore, for the purpose of this tariff petition, the Petitioner has not taken into account the impact (if any) of the enactment of the Punjab Sales Tax on Services Act, 2012. As the law has only very recently been enacted, the true implications and procedures on applicability are not clear at this time. However, in case the Onshore Agreement forming part of the EPC Agreements (being services performed in the province of Punjab) is brought into the ambit of the Punjab Sales Tax on Services Act, 2012, adjusted against output sales tax on electricity sales receipts or is expected to be refunded under sales tax laws.

(d) Income Tax: Advance Income Tax @ 0.00% (Zero Percent) has been assumed at the time of import of machinery, equipment, goods, spares and materials for the Project.

(e) Sindh Infrastructure Development Surcharge (SIDS): Since SIDS is applicable depending upon the weight and distance covered in the Sindh province from the port; furthermore the project is being developed in the Punjab province, the petitioner has not assumed Sindh Infrastructure Development Surcharge on account of imports under the Off-Shore Contract.

(f) Federal Excise Duty (FED): FED on the payments to be made to (1) local financial institutions; and (2) insurer's has not been assumed. In case FED is levied on the financial advisors and lead arrangers' fee, debt arrangement fee and commitment fee, L/C commission and charges, loan administration charges, and insurance

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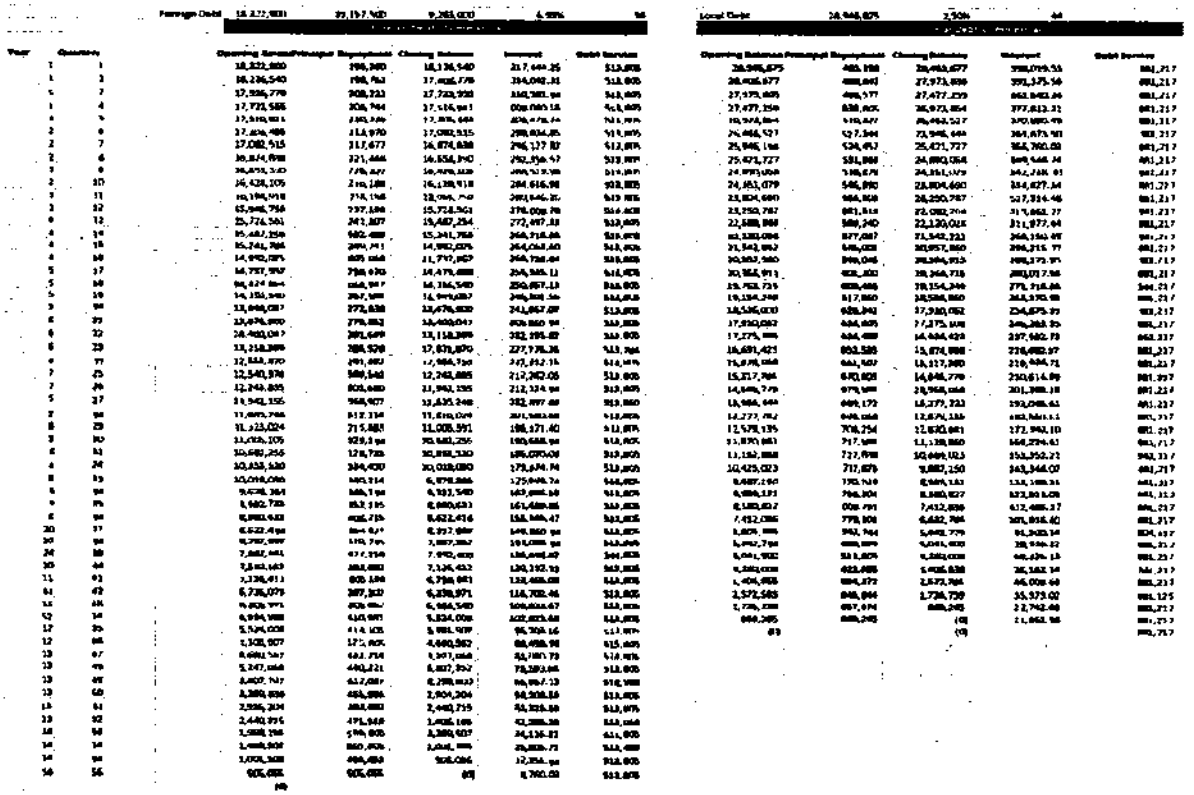
premium the same should be treated as pass-through under the tariff.

[redacted]

4.10 Other Relevant Information:

4.11 Debt Schedule :



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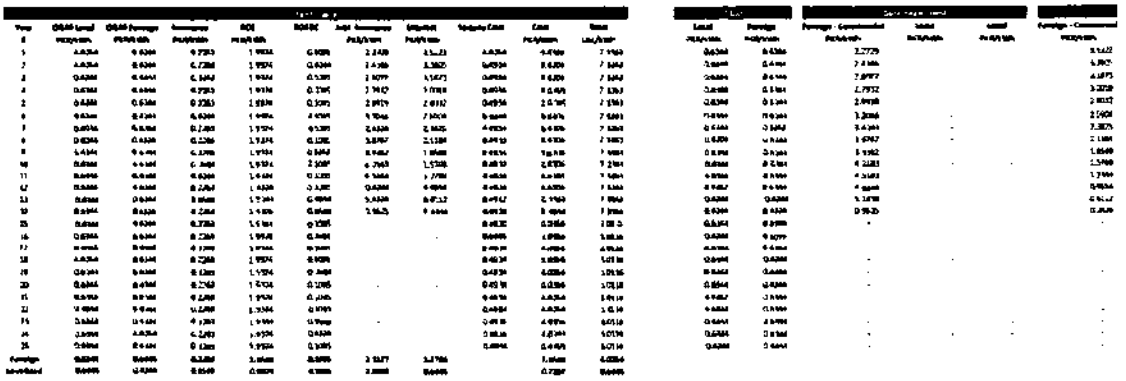
5. TARIFF SUMMARY



5.1 The proposed tariff figures are as follows:

	PKR/kWh	US cents/kWh
Operation & Maintenance	**1.2688**	**0.9469**
Insurance	**2.2632**	**0.1689**
Return on Equity (ROE)	**1.8758**	**1.3999**
ROE During Construction	**1.0599**	**0.0791**
Debt Servicing	**1.8982**	**1.4166**
Interest	**1.0742**	**0.8017**
Total	**6.4496**	**4.8131**

5.2 The Petitioner would like to highlight that the above tariff numbers are based on **Key Tariff Assumptions highlighted in clause 6.3**.

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Key Tariff Assumptions

5.3 Key tariff and operating assumptions are provided below:

	Units	
Gross Capacity	MWp	50
Net Capacity (at site conditions)	MW	40
Initial Output	MWh	95,046,000
EPC Cost	Million	40.135
Project Cost (before interest during construction)	Million	46.344
Total Project Cost	Million	47.519
Annual O&M Costs	USD million	0.9
Insurance	% of EPC cost	0.40
Equity	%	20
Debt	%	80
Return on Equity	%	15
Withholding Tax on Dividends		
Local Debt	% of Debt	60
Foreign Debt	% of Debt	404
Interest/Repayment	Terms	Quarterly
Base LIBOR		6 Months
Spread		3.50%
Cost of Debt		

5.4 **Operations & Maintenance Costs**

5.4 The annual operations & maintenance cost for the Project has been estimated at USD 8million per annum which includes costs related to **Operation & Maintenance** of a 50 MW solar power plant.

Insurance

5.5 The insurance cost component has been calculated based on **0.50% of project cost.**

Return on Equity during Construction ("ROEDC") and Return on Equity ("ROE")

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5.6 The ROEDC and ROE components have been calculated based on a rate of return of **15%**[*in linewith the previous ruling of the Authority on matters related to renewable energy projects*]

5.7 Withholding tax payable on the payment of dividends to the equity holders of the Project is assumed to be Nil

Debt Servicing Component

5.8 The Petitioner has assumed **50%** provision of debt from foreign financial institutions in calculating the debt servicing component of the tariff. In this regard, a letter of interest from potential lenders stipulating indicative terms is attached with this Petition as **Annex [H].**

5.9 The following assumptions have been made in calculating this component (which remains subject to final agreement with the lenders hereon):

(a) Amount of Debt: **USD 18.32 Million**
(b) Term of Debt:**14 Years**;
(c) Interest Rates: **6.93%**; and
(d) Repayment: **Quarterly.**

5.10 The Project drawdown schedule and related Interest During Construction (IDC) is based on project development and cost..

Pass-Through Items

5.11 The Authority is requested to allow following cost components as pass-through to the Company on the basis of actual costs incurred by Company or obligation to be paid in relation to the project in pursuant to the Laws of Pakistan:

a. No provision of income tax has been provided for the tariff. If the Company is obligated to pay any type of tax, the same should be allowed to the project Company as pass through item.
b. No withholding tax in dividend has been included in the tariff. The Authority is requested to allow payment of withholding Tax on dividend as pass through aat the time of actual payment of dividend.

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c. The payments to Worker Welfare Fund and Worker Profit participation Fund have been accounted for in the project budget and have been assumed to be reimbursed as pass through at actual by the Power Purchaser.
d. Zakat Deduction on dividends are required under Zakat Ordinance is considered as a pass through.
e. No tax on income of the Company (including proceeds against sale of electricity to the Power Purchase) has been assumed. Corporate tax, turn over tax, general sales tax/provincial sale tax and all other taxes, excise duty, fees etc. by any federal/provincial entity including local bodies as and when imposed shall be treated as a pass through item.
f. No hedging cost is assumed for exchange rate fluctuations during construction and all cost overruns resulting from variations in the exchange rate during the construction shall be allowed as pass through item.
g. Any Costs incurred by the Company, which are required to be incurred by the Power Purchaser pursuant to provisions of EPA shall also be treated as pass through.
h. Except above mentioned items any other taxes and charges that constitute as part of the Project cost for construction period and operation period shall be treated as pass through

Adjustments to Project Costs and Adjustments at COD

5.12 At COD, the tariff components will be adjusted by **components provided in clause 6.13 below**, as defined and described herein.

5.13 The relevant reference tariff components will also be adjusted on account of **indexation.**.

Indexation :
Summary of Indexation Table:

Fixed O&M (Local)	**Pakistan CPI (General)**	**Quarterly**
Fixed O&M (Foreign)	**US$ to Pak Rupee rate and US CPI**	**Quarterly**
Return On Equity	**US$ to Pak Rupee rate**	**Quarterly**

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Principal Repayment	**US$ to Pak Rupee rate for Foreign Loans**	**Semi-Annual**
Interest Payment	**3-Month LIBOR, SBP Facility Rtae US$ to Pak Rupee rate for Foreign Loans**	**Semi-Annual**
Variable O&M (Local)	**Pakistan CPI (General)**	**Quarterly**
Variable O&M (Foreign)	**US$ to Pak Rupee rate and US CPI**	**Quarterly**

5.14 NEPRA is requested to allow indexation for the various Reference Generation Tariff components in the following manner.

Fixed O&M (Local) Cost Component

The Reference Fixed O&M (Local) Cost Component shall be quarterly indexed to the WPI of manufacturing in Pakistan, as notified by the Federal Bureau of Statistics based on the following formula:

$$FO\&M_{(LRev)} = \text{Relevant Reference Generation Tariff Component} * (WPI_{(Rev)} / WPI_{(Ref)})$$

Where:

$FO\&M_{(LRev)}$ = the revised Fixed O&M (Local) Cost Component applicable for the relevant quarter

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$WPI_{(Rev)}$ = the revised WPI of manufacturing in Pakistan for the month prior to the month in which indexation is applicable, as notified by the Federal Bureau of Statistics.

$WPI_{(Ref)}$ = the WPI of manufacturing in Pakistan for the month in which tariff is determined, as notified by the Federal Bureau of Statistics.

Fixed O&M (Foreign - USD) Cost Component

The Reference Foreign Fixed O&M (Foreign - USD) Cost Component shall be quarterly indexed to both:

(a) the USD/PKR exchange rate, based on the revised TT & OD selling rate of USD notified by the National Bank of Pakistan; and

(b) the US CPI (for all Urban-consumers), issued by the US Bureau of Labor Statistics.

The applicable formula shall be as follows:

$$\mathbf{FO\&M_{(FUSD-Rev)} = Relevant\ Reference\ Generation\ Tariff\ Component * (US\ CPI_{(Rev)} / US\ CPI_{(Ref)}) * (FX\ USD_{(Rev)}/134)}$$

Where:

$FO\&M_{(FUSD-Rev)}$ = the revised Foreign O&M (Foreign – USD) Cost Component, applicable for the relevant quarter

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$US\ CPI_{(Rev)}$	=	the revised US CPI (for all Urban-consumers) for the month prior to the month in which indexation is applicable, issued by US Bureau of Labor Statistics.
$US\ CPI_{(Ref)}$	=	the US CPI (for all Urhan-consumers) for the month in which tariff is determined, as issued by US Bureau of Labor Statistics.
$FX\ USD_{(Rev)}$	=	the revised TT & OD selling rate of PKR/USD as on the date on which indexation is applicable, as notified by the National Bank of Pakistan.

Insurance Cost

The Reference Insurance Cost Component shall be quarterly indexed to USD/PKR exchange rate, based on the revised TT & OD selling rate of USD notified by the National Bank of Pakistan.

Furthermore, the Reference Insurance Cost Component has been calculated on the basis of insurance premium of US$ 200 thousands (0.5% of the EPC Price) per annum, which is subject to a maximum cap of 0.75% of the EPC Price per annum on the production of actual insurance premium. This adjustment of Insurance Cost Component of the Reference Generation Tariff for increased insurance premium shall only be applicable if the actual insurance premium for any year is more than US$ 200,000 (0.5% of the EPC Price) and shall be applied for by the Project Company along with the quarterly indexations and shall be applicable for the next year.

(a) Indexation Formula

The indexation of the Insurance Cost Component shall be based on the following formula:

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$$\text{Insurance}_{(Rev)} = \text{Relevant Reference Generation Tariff Component} * \left(\frac{FX\ USD_{(Rev)}}{134}\right)$$

Where:

$\text{Insurance}_{(Rev)}$ = the revised Insurance Cost Component applicable for the relevant quarter

$FX\ USD_{(Rev)}$ = the revised TT & OD selling rate of PKR/USD as on the date on which indexation is applicable, as notified by the National Bank of Pakistan.

(b) Adjustment Formula

The adjustment of the Insurance Cost Component for increase in insurance premium shall be based on the following formula:

$$\text{Insurance}_{(Adj)} = \text{Relevant Refcrence Generation Tariff Component} * \left(\frac{P_{(Act)}}{P_{(Ref)}}\right)$$

Where:

$\text{Insurance}_{(Adj)}$ = the revised Insurance Cost Component applicable for the relevant year

$P_{(Act)}$ = Actual Insurance Premium or 0.5% of the

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EPC Price whichever is lower

$P_{(Ref)}$ = Reference Insurance Premium of US$ 200,000 (0.5% of the EPC Price)

Return On Equity

In line with NEPRA's previous determinations for thermal IPPs and the RE IPPs, the ROE Component of the Reference Generation Tariff shall be quarterly indexed to the USD/PKR exchange rate, based on the revised TT & OD selling rate of USD notified by the National Bank of Pakistan.

The applicable formula shall be as follows:

$$ROE_{(Rev)} = \text{Relevant Reference Generation Tariff Component}^* \left(FX\ USD_{(Rev)}/134\right)$$

Where:

$ROE_{(Rev)}$ = the revised ROE component applicable for the relevant quarter

$FX\ USD_{(Rev)}$ = the revised TT & OD selling rate of PKR/USD as on the date on which indexation is applicable, as notified by the National Bank of Pakistan.

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Withholding Tax on Dividend

The Reference Withholding Tax Component shall be quarterly indexed to USD/PKR exchange rate, based on the revised TT & OD selling rate of USD notified by the National Bank of Pakistan.

The applicable formula shall be as follows:

$$\mathbf{WHT_{(Rev)} = Relevant\ Reference\ Generation\ Tariff\ Component * (FX\ USD_{(Rev)} / 134)}$$

Where:

$WHT_{(Rev)}$ = the revised Withholding Tax Component applicable for the relevant quarter

$FX\ USD_{(Rev)}$= the revised TT & OD selling rate of PKR/USD as on the date on which indexation is applicable, as notified by the National Bank of Pakistan.

1.1.5 Principal Component (Foreign)

The Reference Principal Component (Foreign) shall be quarterly indexed to USD/PKR exchange rate, based on the revised TT & OD selling rate of USD notified by the National Bank of Pakistan.

The applicable formula shall be as follows:

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$$PRIN_{(FRev)} = \text{Relevant Referenee Generation Tariff Component} * (FX\ USD_{(Rev)} / 134)$$

Where:

$PRIN_{(FRev)}$ = the revised Principal Component (Foreign) applicable for the relevant semi-annual period

$FX\ USD_{(Rev)}$= the revised TT & OD selling rate of PKR/USD as on the date on which indexation is applicable, as notified by the National Bank of Pakistan.

1.1.6 Interest Charges (Foreign)

The Interest Charges (Foreign) part of the Reference Debt Service Component shall be quarterly adjusted for variations in interest rate as a result of variation in 3 months LIBOR & foreign exchange fluctuations in the PKR / USD exchange rate.

The Interest Charges (Foreign) of the Debt Service Component shall be indexed based on the following formula:

$$I_{(Rev)} = \text{Relevant Generation Tariff Component} * (LIBOR_{(Rev)} + 3.5\%) / (LIBOR_{(Ref)} + 4.6\%) * (FX\ USD_{(Rev)} / 134)$$

Where:

$I_{(Rev)}$ = the revised Interest Charge component applicable for the relevant semi-annual period

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$Libor_{(Rev)}$ = the revised 3 month LIBOR rate at the end of each 3 months period.

$Libor_{(Ref)}$ = 3 month LIBOR rate prevailing on the date of tariff determination (0.60%)

$FX\ USD_{(Rev)}$= the revised TT & OD selling rate of PKR/USD as on the date on which indexation is applicable, as notified by the National Bank of Pakistan.

1.1.7 Annual Degradation Adjustment

The Project Company requests that Authority that actual degradation subject to 0.7% per annum of initial power should be allowed through adjustment in Reference Tariff in respective years in line with the "Decision of the Authority in the matter of Tariff Adjustment at Commercial Operation Date of Quaid-e-Azam Solar Power (Private) Limited (QASPL) [Case No. NEPRA/TRF-303/QASPL-20151".

1.2 ADJUSTMENTS AT COD

NEPRA is requested to allow the adjustments to the Reference Generation Tariff at the time of true up at COD.

1.2.4 Adjustments To Project Cost

It is submitted that the Project Cost be adjusted at COD for the following based on the assumptions detailed in Section 7(*Project Cost & Tariff*) and the adjustment to the Project Cost to be reflected in the relevant tariff components (Return on Equity and Debt Servicing):

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(a) The Principal repayment and cost of debt be adjusted at COD as per the actual borrowing composition;

(b) Interest during Construction be adjusted as per actual based on actual disbursement of loans and prevailing LIBOR rates during the project construction period;

(c) The specific items of Project Cost to be incurred in foreign currency (US$) be adjusted at COD based on the PKR / US$ exchange rate prevailing on the date the transaction was carried out;

(d) Customs duty and other taxes be adjusted as per actual;

(e) Impact of Balochistan Sales Tax on Services Act 2012, Sindh Infrastructure Development Surcharge, and Federal Excise Duty be adjusted against output sales tax or refunded by the revenue authority;

(f) Return on Equity be adjusted at COD in accordance with the GOP Policy for Development of Renewable Energy for Power Generation 2006 in order to ensure an IRR based return of 14% on equity (while treating the project as a Build-Own-Operate type project). It is requested that ROE to be adjusted to 16% or higher if NEPRA determines to reduce projects cost detailed in Section 5 (*Project Cost & Tariff*) to ensure appropriate returns to the Project Sponsors.

1.2.5 Adjustment To Working Capital Facility for the Project

A Working Capital facility of PKR [XX] million has been estimated for the Project, which does not include the impact of PKR / USD and variations in KIBOR / LIBOR. The actual amount of working capital required by the Project can only be assessed once COD has been achieved. For this reason, it is humbly prayed that NEPRA allow the Project Company to claim One-Time Adjustment to the extent of working capital required by the Project at the time of achievement of COD.

Annual Degradation Adjustment

6. GENERAL ASSUMPTIONS

6.1 In addition to the assumptions taken in the foregoing paragraphs, the Petitioner's proposed generation tariff takes into account the following assumptions and changes in any of these assumptions will result in changes in the Reference Generation Tariff.

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[redacted]

6.2 Debt: Equity ratio is assumed to be 80:20.

6.3 Foreign lenders shall contribute towards funding 100% of the Debt (LIBOR based financing).

Interest rate for LIBOR based debt has been determined based on 3 Month LIBOR (2.68%) plus 3.50% Spread and quarterly indexation on the same will be allowed by NEPRA.

6.4 Indexation against PKR / USD variations will be permitted for debt servicing payments to be made for settlement of foreign source debt.

6.5 A constant ROE of 14% (IRR based) is assumed (net of 7.5% withholding tax on dividends) over 25 years.

6.6 Exchange rate have been assumed to be: PKR 134 /USD.

6.7 Any taxes federal, provincial, local or district, stamp duties and levies etc which are not factored in the tariff calculation shall be treated as pass through items, in term of EPA.

6.8 No customs duties and income tax have been considered for imports. Any changes in the customs duties or any other duty or tax on import of equipment and material will be treated as "pass through" to the Power Purchaser. Similarly, customs duties on spare parts after COD will be "passed through" to the Power Purchaser.

6.9 The Project does not come under the ambit of Punjab Sales Tax on Services Act, 2012. In case it is deemed that the Project is subject to payment of any taxes under said act, the same are to be adjusted against output sales tax or may be refunded by the revenue authorities.

6.10 Deduction of withholding tax is assumed only in the On-Shore Contract. No withholding tax has been considered in the Off- Shore Contract. Any additional tax, if levied, will be "pass through" to the Power Purchaser

6.11 7.5% withholding tax on dividend is assumed. Any changes in the aforesaid withholding tax regime will be "pass through" to the Power Purchaser. General Sales Tax and all other taxes will also be treated as a "pass through"

6.12 The Zakat deduction on dividends (currently @ 2.5%), as required to be deducted under Zakat Ordinance, is to be considered as "pass through".

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6.13 Sindh Infrastructure Development Surcharge on the imports for the Project has not been assumed and shall be adjusted upon COD as per actual.

6.14 Federal Excise Duty has not been assumed as part of the Project Cost; in case the same is required to be paid by the Project, the same should be treated as pass-through under the tariff.

6.15 The Power Purchaser / NTDC shall be exclusively responsible for the financing of construction, operation and maintenance of the interconnection and Transmission Lines as per the prevailing policy at the time of tariff determination

6.16 Main Energy meter and electronic recorder for continuous recording of readings will be provided by NTDC at its own cost.

6.17 Financing Terms are as yet based on the initial discussion with the financial institutions and hence are subject to final negotiations once tariff has been determined by NEPRA and the EPA / IA are signed. This will include mainly the debt-equity ratio, Grace Period and loan repayment term, benchmark index (LIBOR/KIBOR) and the spread margin of the financial institution.

6.18 Pre-COD insurance costs are considered based on the estimates inline with market rates and Group's strengths. Premium rate for the insurance arrangements will be finalized at the time of financial closure.

6.19 No hedging cost is assumed for exchange rate fluctuations during construction and all cost overruns resulting from variations in the exchange rate during construction shall be included in the Project Cost.

6.20 Project contingency and maintenance reserves are not included in Reference Generation Tariff calculations. If required by Lenders, these will be adjusted accordingly in the Reference Generation Tariff.

6.21 Any other assumptions that are not expressly stated herein but are based on the EPA draft negotiated by the Project Company with the Power Purchaser. Consequently any change in any such assumptions may lead to change in the Reference Generation Tariff.

6.22 The payments to Workers Welfare Fund and Workers Profit Participation Fund have not been accounted for in the Project budget and have been assumed to be reimbursed at actual by the Power Purchaser.

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[redacted]

6.23 Degradation structure to be added

Any incentives given to any other solar IPP shall also be given to the Project Company.

6.24 [*As AEDB is yet to provide the draft standard energy purchase agreement for the Project, the Petitioner may revert to NEPRA for adjustment, if the provisions of the energy purchase agreement are in conflict of the assumptions on which the tariff is presently filed*].

7. DIFFERENTIATING FACTORS

7.1 The method for tariff calculation employed by NEPRA is based on the assumption that the energy produced on a monthly basis is the average of the annual energy production figure (i.e. annual energy production / 12) and therefore, the Project is expected to receive harmonized cash flows throughout the year.

7.2 However, the energy produced by the Project for a given month is directly dependent on the solar irradiation for that month, which varies significantly from one month to the next and thus results in erratic Project cash flows.

7.3 The total Project Cost is to be funded on a 80:20 Debt: Equity basis and variation in monthly solar irradiation will result in an un-even behavior of the cash flows – thus hampering the debt servicing capability of the Project Company. Therefore, the Project Company requests NEPRA to allow a correction factor to be applied to the monthly energy production figure (to be used for calculation of the Monthly Energy Payment (as defined under the EPA)) (the Correction Factor) that is similar to the treatment provided in Schedule 10 of the standard Power Purchase Agreements for thermal power producers.

7.4 The Correction Factor formula proposed to be applied for calculation of Monthly Energy (to be used for determining the Monthly Energy Payment) is set out below:

7.5 Correction Factor= (((Sum of Monthly Benchmark Energy for a year)/12))/(Monthly Benchmark Energy for the relevant month)

7.6 The Correction Factor being requested will not impact the total annual revenues of the Project Company and will only provide means of self-sustenance to the Project.

I. COMPARITIVE COSTS

Not Aplicable

J. TARIFF DESIGN

As required under Rule 3(2)(e) of the Rules, please find appended herewith the table of the existing tariff design under section 5.11.

K. EVIDENCE

We request that the Petitioner be allowed to submit additional evidence and further submissions in relation to this Petition, as and when required by the Authority.

L. DETERMINATION SOUGHT

In light of the foregoing submissions, the learned Authority is kindly requested to accept this Petition and approve the Petitioner's generation tariff (together with the pertinent indexations in accordance with the Project costs and the assumptions related thereto) for the Project, as mentioned above, for a 25years energy purchase agreement term post COD.As (a) LOI granted and land for the Project has been allocated w by Govemment of Balochistan, (b) grid has been allocated and interconnection study approved by NTDC (c) the Project Feasibility Study has been approved by BPDP, (d) binding EPC and O&M arrangements for supply, construction, erection, commissioning, operation and maintenance of the Project are in place (e) Project debt and equity funding has been arranged, (f) contractors are mobilized at the Project site. Accordingly, it is submitted that the requirements of the regulatory process for applying to NEPRA for the tariff determination of solar PV power project of EQSPL have been completed.

TARIFF SUMMARY

In summation, the Project Company herewith most respectfully submits before NEPRA for its approval the matters set out in this Tariff Petition and further prays for NEPRA to kindly approve the following:

- ✓ The Project Costs and related arrangements stated in this Petition be allowed to the Petitioner.
- ✓ Energy production estimate of 95.081 GWh per annum for calculation of the tariff and energy payments for the years 1 – 25 after COD.
- ✓ The Power Purchaser be directed to make payment against Bonus Energy (energy above the Monthly Benchmark Energy) on monthly basis.
- ✓ The Project be allowed to claim compensation for energy supplied prior to COD at the rate of tariff allowed by NEPRA for the first year minus the debt servicing components.
- ✓ Funding of the Project on an 80:20 – Debt: Equity basis.
- ✓ 40 % foreign debt on LIBOR basis.
- ✓ LIBOR based debt financing (40%) with a base rate equal to 3-Month LIBOR plus a spread of 3.50%.

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- ✓ 60% Local Debt on SBP facility
- ✓ SBP Facility based Local debt 60% with base rate equal to SBP facility rate plus 3.50% spread.
- ✓ Sharing of any CER related revenues subsequently realized, as per the Government of Pakistan policy.
- ✓ A Return on Equity of 14% (net of 7.5% withholding tax) on IRR basis
- ✓ Indexations and adjustments for the individual tariff components, as detailed in Section 5.13 (Indexations, Adjustments and Cost Escalations) above.
- ✓ The General Assumptions, as provided in Section 6 (General Assumptions).

Furthermore, given the advance stage of the Project, NEPRA is kindly requested to process the Tariff Petition at the earliest thereby enabling the Project Company to proceed further with the development process.

The Petitioner will be pleased to provide any further information, clarification or explanation that may be required by the Authority during its evaluation process.

Yours sincerely,
For and on behalf of
Enertech Bostan Solar (Private) Limited

Yasser Malik, Chief Executive Officer