KULACHI SOLAR POWER

KULACHI SOLAR POWER (PVT) LTD

Ref:

July 06, 2018

The Registrar
National Electric Power Regulatory Authority (NEPRA)
NEPRA Tower,
Attaturk Avenue (East),
Opposite Federal Flood Commission,
Sector G-5/1,
Islamabad, Pakistan

Subject: **Submission of Tariff Petition of Kulachi Solar Power (Private) Limited (the "Company") for 50MWp Solar Power Project (the "Project") in D.I. Khan, Khyber Pakhtunkhwa, Pakistan**

Dear Sir,

The Company, Kulachi Solar Power (Private) Limited ("**KSP**") by virtue of Board Resolution dated 11TH June, 2018, is pleased to submit the subject Tariff Petition in respect of its 50MWp solar power project at D.I. Khan, Khyber Pakhtunkhwa, Pakistan.

Kindly accept the Company's Tariff Petition, along with such fee as determined by the National Electric Power Regulatory Authority ("NEPRA" or the "Authority"), for kind consideration and favorable approval by the Authority in accordance with, *inter alia*, Section 31 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 read with Rule 3 of the NEPRA Tariff Standards and Procedure Rules, 1998 and other applicable provisions of NEPRA law.

A Pay Order No. 02153223 dated 06TH July, 2018 in the sum of Rs. 629,504/- (Rupees Six Hundred and Twenty Nine Thousand Five Hundred And Four Only), being the non-refundable application processing fee is also attached herewith.

We are pleased to enclose herewith one (1) original along with two (2) copies of Tariff Petition. This Petition is being submitted along with a duly executed copy of an affidavit attached to the Petition.

Yours Sincerely,

Engr. Aziz Raza Malik
Chief Executive Officer

PETITION FOR GENERATION TARIFF

Kulachi Solar Power (Private) Limited

a 50MWp Solar Power Project
at D.I. Khan, Khyber Pakhtunkhwa, Pakistan

July 2018

SECTION-1

EXECUTIVE SUMMARY

KULACHI SOLAR POWER (PRIVATE) LIMITED
50MWp SOLAR POWER PROJECT
D. I. KHAN, KHYBER PAKHTUNKHWA, SINDH

Legal Basis	This tariff petition (the "**Petition**") is being filed by M/s Target Energy (Private) Limited for M/s **Kulachi Solar Power (Private) Limited** under, inter alia, the NEPRA Act. National Electric Power Regulatory Authority ("**NEPRA**") Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of) 1997 (the "**NEPRA Act**"), NEPRA (Tariff Standards and Procedure) Rules, 1998 (the "**NEPRA Tariff Rules**"), read with other applicable provisions of NEPRA laws, the Government of Pakistan's Policy for Development of Renewable Energy for Power Generation, 2006 (the "**Policy**").
Policy Incentives	This Project is being developed under the Policy. The Policy is designed to encourage investment and development of renewable projects via attractive tariffs. The Policy, inter alia, offers the following incentives to the Project and its sponsors: • Tariff is calculated on a project-specific basis, designed to cover costs and provide a reasonable return on equity; • Guaranteed access to market; • Guaranteed evacuation of power; • Transfer of solar resource risk to the power producer; • Sharing of carbon credit revenues; • Comprehensive security package. There will be additional incentives for lenders to ensure that lenders' capital will be exposed to minimal risk.
Petitioner	Target Energy (Private) Limited obtained a Letter of Intent from Pakhtunkhwa Energy Development Organization ("**PEDO**") for setting up a 50MW solar Power Generation Project (the "**Project**") at D.I. Khan, Khyber Pakhtunkhwa, Pakistan. As required under Section-24 of NEPRA Act, Sponsors have incorporated M/s **Kulachi Solar Power (Private) Limited** ("**Petitioner**" or "**KSP**" or the "**Project Company**") under the Companies Act, 2017, to act as a special purpose vehicle (the "SPV") for developing the above mentioned Project. The certificate of incorporation, it memorandum and articles of associations are appended herewith as Annex – A & B.
Letter of Intent (LOI)	Target Energy (Private) Limited obtained a Letter of Intent ("**LOI**") on 20 October 2016 from PEDO for setting up a 50MW solar Power Generation Project (the "Project") at D.I. Khan, Khyber Pakhtunkhwa, Pakistan.

	LOI has not yet been transferred on the name of KSP and will be transferred to the Project Company after getting necessary approvals from PEDO in due course. A copy of the LOI and an extension in LOI is attached hereto at Annexure C & D.
Rule 3(2)(a)	**Petitioner's Address & Registered Office** M/s Kulachi Solar Power (Private) Limited 7th Floor, Green Trust Towers, Jinnah Avenue, Blue Area, Islamabad - Pakistan Landline: +92 51 2813101-103 Fax: +92 51 2813104-105 Petitioner Representatives; Mr. Aziz Raza Malik, Chief Executive Officer
Rule 3(2)(a)	**Generation License** The Petitioner has already filed an application for the generation license with NEPRA. Copy of application is attached as Annexure E.
Rule 3(s)(b)	**Grounds** The Petition encapsulates the grounds.
Rule 3(2)(c)	**Relief Sought** The Petition encapsulates the relief sought from the esteemed Authority.
Rule 3(2)(f)	**Summary of Evidence** *(Brief Particulars of Data, Facts & Evidence in Support of the Petition)* The Petition is supported with pertinent documents. Further additional documents/evidence, if required by the Authority will be submitted upon request.
Submission of the Feasibility Study and approval of the same	In compliance with the requirements laid out in the Policy and in the LOI, Project Company has completed feasibility study for the Project and submitted the same to PEDO for their review and approval (the "**Project Feasibility Study**"). PEDO approved the Project Feasibility Study on 13 February 2018, copy of approval of Project Feasibility Study by PEDO is attached as Annexure F. *Grid Interconnection Study:* In compliance with NTDC and PESCO, Project Company engaged Power TEK for conducting the grid interconnection study. Project Company submitted the detailed grid interconnection study of the Project to PESCO and NTDC for their approval. Approval from PESCO is attached as Annexure G. NTDC has provided its comments on Project's grid interconnection study on 14 June 2018 and will be approved by NTDC in due course. Panel of Experts of PEDO has approved feasibility study of the Project in February 2018. Approval of Feasibility Study is attached as Annexure F.

Submission	As per the terms of NEPRA Rules, NEPRA Act, the Policy and the Guidelines , and on basis of compliance with the various conditions, Project Company submits herewith a Petition for the kind consideration of NEPRA, and for approval of the following: (i) The Reference Generation Tariff; (ii) The Indexations and Adjustments; (iii) Adjustments at commercial operations date; and (iv) Other matters set out in this Petition.

SECTION-2

PROJECT SUMMARY

Project Company	Kulachi Solar Power (Private) Limited c/o Target Energy (Private) Limited
Main Sponsors	i. H1 Holdings (Pty) Ltd. ii. Atlantic Energy Partners iii. Target Energy (Private) Limited iv. Alternative Grid North Africa Limited
Project Capacity	50MWp
Project Location	D. I. Khan, Khyber Pakhtunkhwa, Pakistan
Land Area	309 Acres
Land	Procured private land in D.I. Khan
Concession Period	25 years from Commercial Operations Date
Power Purchaser	Central Power Purchasing Agency (Guarantee) Limited
EPC and O&M Contractor	TBEA Xinjiang SunOasis Co., Ltd., China
Energy Generation Estimates	85.117 GWh at P90
Currency Conversion	1USD = Pak Rupees 115
Estimated Project Cost	see table below

Description	USD
EPC Cost	41,000,000
Land	990,000
Pre-COD insurance	205,000
Project development cost	3,962,697
Project cost BEFORE IDC & Financing Charges	**46,157,697**
Financial fees and charges	1,258,991
Project Cost Excluding IDC	**47,416,688**
Interest during construction (IDC)	1,333,312
Project Cost Including IDC	**48,750,000**

Financing Ratio

Description	USD
Debt (75%)	36,562,500
Equity (25%)	12,187,500
TOTAL	48,750,000

Financing	Sponsors have obtained an Expression of Interest from Kfw DEG, Germany for the 100% of debt requirement of the Project.
Financing facility	Foreign Currency - US Dollars
Terms of Long Term project financing	Currency: US Dollar Debt Term: 1+ 13 Years Grace Period: 10 Months (i.e. construction period)

	Interest Rate	6 months LIBOR (i.e. 2.31781%) + 450 bps
Levelized Tariff	7.6314 US Cents per kWh / 8.7761 Rs per kWh	
Lead Project Consultant	Arooj Consulting (Private) Limited, Islamabad, Pakistan	
Concession Documents	▪ Energy Purchase Agreement with the Power Purchaser (i.e. CPPA(G)). ▪ Implementation Agreement with the Government of Pakistan through AEDB. ▪ Sovereign Guarantee by Government of Pakistan	
Applicable GOP Policy	Policy for Development of Renewable Energy for Power Generation 2006	

SECTION-3

PROJECT STATUS AND MILESTONE ACHIEVED

Target Energy (Private) Limited obtained a Letter of Intent ("**LOI**") from Pakhtunkhwa Energy Development Organization ("**PEDO**") on 20 October 2016 for setting up a 50MW solar Power Generation Project (the "**Project**") at D.I. Khan, Khyber Pakhtunkhwa, Pakistan. In this respect, Sponsors have incorporated M/s Kulachi Solar Power (Private) Limited ("**KSP**") in Pakistan, its sole objective is to develop, finance, build and operate up above mentioned Project. PEDO will transfer LOI in the name of KSP in due course.

Sponsors have submitted quarterly reports regularly to PEDO as per the terms of LOI whereas final Project Feasibility Report was submitted to PEDO on 16 August 2017. In compliance with the requirements of LOI, Sponsors have completed all the major milestones as given in the LOI. PEDO approved the Project Feasibility Study on 13 February 2018, copy of approval of Project Feasibility Study by PEDO is attached as Annexure F.

The Project undertook a detailed grid interconnection study and submitted to NTDC and PESCO on 24 August 2017 for their review and approval. PESCO visited the Project Site in December 2017 and provided their comments on Project's grid study on 16 January 2018.

Project's grid study was subsequently revised on the basis of NTDC's "Updated grid forecast data till Year 2022". The "Updated grid forecast data till Year 2020-2022" was provided by PESCO to the Project's consultant i.e. Power TEK on 26 January 2018. Project's grid study was revised on the basis of the comments of PESCO wherein other solar power projects were to be connected through D/C transmission line with rail conductor at 132KV Kulachi grid station. PESCO vetted the revised grid interconnection study for load flow, contingency, short circuit and stability analysis. The proposed interconnection scheme was reviewed through 15 km Double Circuit Transmission Line starting from 132 kV at Project Site to 132 kV at Kulachi Grid Station having rail conductor for connecting the Project. PESCO vide their letter No. CW (Dev)/1366-68 dated 16 March 2018 found Project's grid interconnection scheme technically feasible and approved the Project's grid interconnection study.

CPPA (G) vide its letter No. Tech/DGMT-II/MT-V/KSPV/7178-81 dated 26 March 2018 forwarded the Project's grid interconnection study to Power System Planning, NTDC for their approval of grid interconnection study of the Project. In response to NTDC's Letter No. GMPP/CEMP/TRP-380/2527-30 dated 27 April 2018, Project has submitted required fee of Rs. 1 million for review and vetting of grid interconnection study to NTDC on 3 May 2018. NTDC has provided its comments on Project's grid interconnection study on 14 June 2018. It is expected that NTDC will also approve the Project's grid interconnection study shortly.

Representative of Forest Department visited the site in August 2017 and observed that site area falls in a private land and no forest trees standing in the area. Therefore, Range Forest Officer vide letter No. 23/Kul dated 12 August 2017 has issued No Objection Letter to the Project.

Pakistan Army vide its letter No. Case No. 21/GS (A)/ Misc dated 20 December 2017 issued a NO Objection Letter to the Project. As per the Pakistan Army's letter,

> "*Development projects in Kulachi area are highly warranted in order to kick start an economic activity, which will considerably improve the outlook and law/order situation.*

While we welcome this project without any objection at the moment, it is to inform you that the minor details relating to the security aspect of the project will have to be fully coordinated with this unit/concerned headquarters, once the actual on ground development cammences. We look forward for an early initiation of the project."

Sponsors engaged Hagler Bailly Pakistan (Private) Limited to undertake the Project's feasibility assessment, including an Initial Environmental Examination (IEE) Report. IEE report was prepared in accordance with the environmental regulations of KPK province and World Bank guidelines. Directorate of Environmental Protection Agency, Southern Region D.I. Khan, Forestry, Environment and Wildlife Department, Government of Khyber Pakhtunkhwa vide its letter No. EPA/IEE/50MW Solar-Target/707 dated 22 January 2018 approved the IEE of the Project.

Sponsors engaged 3E, a renowned international firm based out of Belgium to conduct the solar assessment study of the Project. Lender requirements for energy estimation is based on P90. Annual Capacity Factor of 19.43% is assumed for calculating the Project Tariff which is taken from a third party study conducted by 3E

Panel of Experts of PEDO reviewed the revised feasibility study of the Project. PEDO vide its letter No. 344-47/PEDO/DPP/TE dated 13 February 2018 approved the feasibility study of the Project.

Sponsors have selected EPC Contractor through a competitive bidding process and details are given in Section 7 of this Tariff Petition.

As it is clear from the Project Status update, since issuance of LOI, Project has achieved significant progress. It is expected that Project will achieve financial close by 31 October 2018; and construction will start in November 2018. Under the terms of the EPC Contract, construction will be completed in 10 months and tentative Commercial Operations Date ("**COD**") is 31 August 2019.

Following table shows the progress made so far by the Project;

Activity	Status
Security by Sponsors for Letter of Interest (LOI)	Submitted
Letter of Interest	Issued
Possession of land	Have Possession
Solar related studies - solar resource assessment	Completed
Grid interconnection study	Completed
Submission of grid interconnection study to power purchaser	Submitted
Completion of Soil survey	Completed
Transportation study	Completed
Initial Environmental Examination (IEE)	Completed
Decision (NOC) on Initial Environmental Examination (IEE) by Environmental Protection Agency, Government of KPK	NOC issued
Topographic survey/study	Completed
Completion of feasibility study	Completed
Approval of Feasibility study by PEDO	Approved
NOC from Forest Department D.I. Khan	Issued
NOC from Wildlife Department	Issued
NOC from Pakistan Army	Issued
NOC from Fisheries Department	Issued

Grid Interconnection Study approval by PESCO	Issued
Execution of Land Lease Agreement	Signed
Equity participation from the Sponsors for the Project	Lined Up
Debt for the Project	Term Sheet obtained
Submission of generation license	Submitted

Following are the future milestones;

Activity	Completion Month
Submission of Tariff application	May 2018
Execution of Energy Purchase Agreement	August 218
Execution of Implementation Agreement	August 2018
Execution of Financing Documents	September 2018
Achievement of financial close and issuance of notice to commence	October 2018
Project Construction	November 2018
Commercial Operations Date	August 2019

SECTION-4

KEY PROJECT STRENGTHS

The key strengths of the Project are proposed below:

a) Executed EPC and O&M Contracts with a global leader in solar technology
Sponsors have selected EPC Contractor for the Project through a competitive bidding process. After thorough process, Project Company has able to execute its EPC Contract with TBEA Xinjiang SunOasis Co., Ltd., China. Project Company has also negotiating O&M Contract with TBEA Xinjiang SunOasis Co., Ltd.

TBEA Xinjiang SunOasis Co., Ltd., China is one of the most experienced EPC contractors in Pakistan. They have done 100MW Quaid-e-Azam Solar Power Project in Punjab.

b) Definitive contracts
i. Lump sum, fixed price and date certain.
ii. Full scope of work covering both EPC and O&M phases.
iii. Sufficient contractor security/performance warranties to ensure completion and performance.

c) Improved Technology
i. Latest technology which is also running around the world and featuring important improvements;
ii. Better energy production.

d) Strong Project Management Team
The Project is being managed by a team of professionals, who derive experience of commissioning various projects worldwide.

Eng. Aziz Raza Malik is leading the development efforts in Pakistan on behalf of Sponsors. He is an experienced power sector professional and has successfully developed and commissioned complex hydro projects in past.

Project Company has also engaged a team of leading and reputable foreign and local names to act as the consultants to-the Project Company for the development of the Project. The team of consultants brings with it knowledge of solar market and practices, experience of transaction structuring, strong grasp of concessionary framework in Pakistan and transaction execution capability.

e) Project Developer
Project is being developed by "Atlantic Energy Partners", headquartered in South Africa ("AEP") was incorporated with the vision of providing renewable energy sector with a full turnkey service provider of excellence as a respected Independent Power Producer ("IPP").

AEP team brings diverse experience and a history of success to the company; with expertise in engineering, energy development, procurement and project management. The AEP team offers years of relevant work experience within the financial services industry and unparalleled expertise in: project feasibility assessments; due diligence; legal framework implementations; corporate structuring and tax optimisation; capital raising and structuring for optimal returns on equity investment.

AEP team has a cumulative track record of successfully developing projects from initiation to financial closure of four separate projects totalling 225MW of solar PV and 138MW of onshore wind in the first three rounds of REIPPPP in South Africa which have all reached COD (363MW).

An additional three solar PV projects totalling 225MW (3 x 75MW) have been selected as preferred bidder from bid window four and are will reach financial close in 2018. A total of 590MW in South Africa.

In January 2016 it was awarded a 50MW Solar PV by the Republic of Mali located in Sikasso, Mali. AEP hopes to reach financial close of a 100MW solar PV project in Nigeria in 2018. AEP has a pipeline of renewable energy projects in excess of 2GW in SA and Africa.

f) Project Team

Sponsors have engaged a team of professionals to assist in developing the Project;

Organization	Role
Kulachi Solar Power (Private) Limited	Project Company
Atlantic Energy Partners	Lead Project Developer
TBEA Xinjiang SunOasis Co., Ltd., China	EPC Contractor
TBEA Xinjiang SunOasis Co., Ltd., China	O&M Operator
Hagler Bailly Pakistan Private Limited	Technical Consultant
3E, Belgium	Consultant for Solar Assessment
Hagler Bailly Pakistan (Private) Limited	Geo Technical Studies
Hagler Bailly Pakistan (Private) Limited	Environmental Studies
Power TEK	Grid Study
Hagler Bailly Pakistan (Private) Limited	Route Access Report
RIAA Barker Gillette	Legal Counsel

SECTION-5

SPONSORS PROFILE

There are a number of Sponsors of the Project Company, brief introduction of Sponsors is given below;

1. H1 Holdings (Pty) Ltd. ("**H1**") is Main Shareholder of the Project Company, headquartered in Cape Town, South Africa. It is an established investment company founded in 2000 with strong balance sheet which is highly liquid and is wholly owned and managed by experienced black individuals. H1 provides expansion and buyout capital to companies in partnership with management. It is focused on the energy sector and is building significant operational and technical capacity in the energy sector.
2. Atlantic Energy Partners ("AEP") is a Shareholder of the Project Company. It was incorporated with the vision of providing renewable energy sector with a full turnkey service provider of excellence as a respected Independent Power Producer ("IPP").
3. Target Energy (Private) Limited is a Shareholder of the Project Company. Sponsors of Target Energy (Private) Limited are Pakistani nationals. The principle business of Target is to invest in renewable energy projects in Pakistan and to provide key development and operational services to these projects.
4. Alternative Grid North Africa Limited ("**AGNA**") is a Shareholder of the Project Company, incorporated and headquartered in Dublin, Ireland. AGNA is an international renewable energy developer with an experienced team developing renewable energy and infrastructure projects in Africa and Asia.

SECTION-6

PROJECT SITE

6.1 Introduction

The Project is located near the town of Kulachi in Dera Ismail Khan District of Khyber Pakhtunkhwa province. The district has an area of 7,326 km2 and borders South Waziristan district in the Federally Administered Tribal Areas (FATA) to the west, the districts of Tank and Lakki Marwat of KP to the northwest, and the districts of Mianwali, Bhakkar and D. G. Khan in Punjab province to the northeast, east and south.

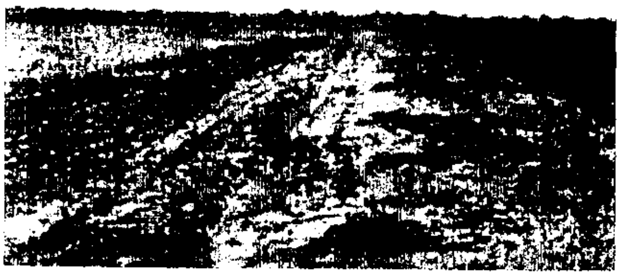
The Project Site is located 15 km west of the village of Kulachi, or 60 km due west of the town of D. I. Khan, the administrative headquarters of the district which, in turn, lies 290 km southwest of the federal capital, Islamabad.

The Site area is approximately 309 acres with rectangular dimensions of 1,118 m by 1,183 m. The land at the location and its surroundings is semi-arid agricultural, with a small village situated some 163 m north of the site's northwestern corner.

The Site selected for the Project is generally flat, with a minor slope towards the southeast, with the slope increasing towards the southern end of the site boundary.

Project Site soils have been generally classified as Type D based on field standard penetration test results according the International Building Code (IBC) 2009.

The site pictures are given below;

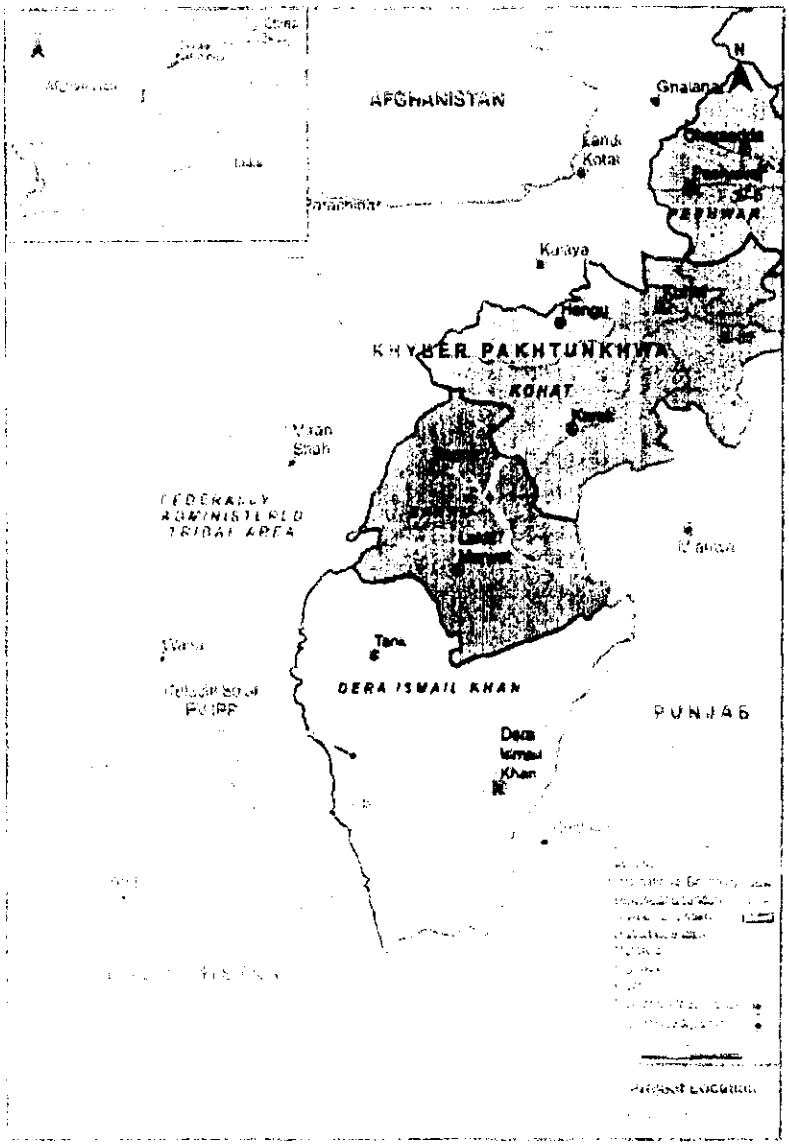


Generally, the soil at the Project location is classified as clayey sand (SC) or poorly graded clayey sand (SP-SC) up to a depth of 4.12 m. Normally, isolated footing is recommended for solar panel mounts

The Site consists of barren land with wild vegetation and clear signs of minor soil erosion. Before project execution, the site will be cleared of all vegetation and land must be developed in a way that rain water flows to the nearest artificial drains constructed on site for the same purpose.

Generally the topography of the area is flat, which makes it suitable for solar installations.

Below image shows the location of KSP;



SECTION-7

SELECTION OF EPC CONTRACTOR

As different varieties of such solar modules are available in the market; however, therefore selection of good quality module was a challenge while keeping overall project cost at a minimum level. Project Sponsors were of the view to select the best technology while keeping in view the climatic conditions, payback period, and bankability of the EPC Contractor etc.

The Sponsors have run a competitive bidding process to select an EPC Contractor for the Project. ***The selection process of EPC Contractor was run in accordance with the "2017 Guidelines of NEPRA for the selection of EPC Contractors by IPPs".***

KSP engaged an Independent Consultant for thorough evaluation of EPC proposals besides reviewing proposals internally and selected equipment on the basis of better output, efficiency and performance.

KSP advertised in three (03) national and two (02) international newspapers and also advertised on two (02) international tender web sites in October 2017.

- 50 different national and international companies responded and requested to provide them the requirements for pre-qualification ;
- 23 different national and international companies submitted their pre-qualification documents;
- 9 different national and international companies were shortlisted by an Independent Consultant for the issuance of RFP;
- 3 international companies submitted their detailed technical and commercial proposal, in response to the circulated RFP to 9 different shortlisted companies.

Sponsors allowed 60 days to the shortlisted companies to respond with their detailed proposals.

Detailed technical evaluation was carried out and clarifications were also sorted out. All three (03) companies were first invited to discuss the technical specifications and then were also invited for commercial negotiations.

Based on i) detailed technical evaluation, ii) negotiations of term sheet and iii) interest shown by the EPC Contractors on the Project, Sponsors have selected M/s TBEA Xinjiang SunOasis Co., Ltd. as an EPC Contractor for the Project.

TBEA Xinjiang SunOasis Co., Ltd., China will procure brand new plant and equipment including solar panels. Entire plant and equipment will be reliable, efficient and of highest international standard with proven technology.

Salient features of the selected equipment is as follows';

a)		Solar Panels -- PV Modules
i.	Type of Module	330Wp
ii.	Type of Cell	Poly-crystalline
iii.	Dimension of each Module	1956×992×40mm
iv.	Module Surface Area	1.94m²

v.	No. of Panels / Modules	151554	
vi.	Total Module Area	294068m^2	
vii.	Total Land Area Used	1230489m^2	
viii.	Panel's Frame	Anodized Aluminium Alloy	
ix.	Weight of one Module	26.5kg	
x.	Module Output Warranty	For 1st year	For 2nd to 25th year
		2.5% degradation	0.7% annual degradation
xi.	Number of Solar Cells in each Module	72	
xii.	Efficiency of Module	17.01%	
xiii.	Maximum Power (P_{max})	330Wp	
xiv.	Voltage (P_{max})	37.8V	
xv.	Current (P_{max})	8.74A	
xvi.	Open Circuit Voltage (V_{oc})	46.9V	
xvii.	Short Circuit Current (I_{sc})	9.14A	
xviii.	Maximum System Open Circuit Voltage	1500V	
b)		**PV Array**	
i.	No. of Sub-Arrays	16	
ii.	Modules in a String	29	
iii.	Total No. of Strings	5226	
iv.	Modules in Sub-Array	9512/9454/9106	
v.	Total No. of Modules	151554	
c)		**PV Capacity**	
i.	Total	50.01282MW	
d)		**Inverters**	
i.	Capacity of each unit	2.5MW	
ii.	Inverter Model	centralized	
iii.	Manufacturer	TBEA	
iv.	Rated Input Voltage	900Vdc	
v.	Input Operating Voltage Range	900Vdc-1250Vdc	
vi.	Number of Inverters	16	
vii.	Total Power	40MW	
viii.	Efficiency	European 98.7%	
ix.	Max. Allowable input voltage	1500V	
x.	Max. Input Current	2×1432A	
xi.	Max. Power Point Tracking Range	900~1250V	
xii.	Output electrical system	AC ,Three-phase	
xiii.	Rated Output Voltage	630Vac	
xiv.	Rated Frequency	50Hz	
xv.	Power Factor	0.9(leading)~0.9(lagging)	
xvi.	Power Control	/	
xvii.	Environmental Enclosures	Protection	IP65
		Dimension	2991mm×2591mm×2438mm
		Cooling Method	Forced air
		Altitude	Max.3000m

		Compliance		
xviii.	Grid Operation Protection		a)	Over/under-voltage Protection
			b)	Over/under-frequency Protection
			c)	ZVRT
			d)	Anti-islanding Protection
			e)	Over-current Protection
			f)	Anti-discharge Protection
			g)	Overload Protection
			h)	Lightning Protection
e)		**Data Collecting System**		
i.	Weather Data	Weather station		
ii.	System Data	SCADA		
f)		**Isolating Transformer**		
i.	Rating	2.5MVA		
ii.	Type of Transformer	oil-immersed		
iii.	Configuration	Enclosure of Cubicle		
iv.	Output Voltage	33kV		
v.	Purpose of Transformer	Step-up		
vi.	Efficiency	99%		

SECTION-8

PROJECT CAPITAL COST

8.1 Introduction

The Project will comprise of installation of up to 151554 solar panels. Project will be constructed under the terms of a fixed-price, turnkey contract whereas construction will be completed in a continuous period of 10 months.

Total Project Cost of USD 48,750,000, expressed in United States Dollars, has been calculated after thorough analyses, evaluation and understanding of the dynamics that affects the development, construction and operations of a solar power project in Pakistan.

The estimated total Capital Cost includes the following;

i) All turnkey engineering, procurement, and construction costs;
ii) Construction management cost and Project development cost;
iii) Land and site preparation costs;
iv) Duties and taxes;
v) Insurance costs; and
vi) Interest cost and related financing charges during construction.

The Project cost will be financed by a combination of Debt and equity.

Break up of Project Cost is given below;

PROJECT COST	US$
EPC Cost	41,000,000
Land	990,000
Pre-COD insurance	205,000
Project development cost	3,962,697
Project cost BEFORE IDC & Financing Charges	**46,157,697**
Financial fees and charges	1,258,991
Project Cost Excluding IDC	**47,416,688**
Interest during construction (IDC)	1,333,312
Project Cost Including IDC	**48,750,000**

8.2 EPC Cost

Bankable EPC with a reputable EPC Contractor is one of the pre-requests to arrange project finance for the Project. Under the EPC Contract, EPC Contractor takes end-to-end responsibility for engineering, procurement and construction of the Project and also provides Performance Guarantees to the Project. These Performance Guarantees cover timely completion of the Project and performance parameters of the plant.

Solar market has behaved differently recently, there is a reduction in module prices, which is offset by rising prices of basic construction material like steel, cement, sand as well as machinery cost etc. whose costs have been accounted for in the EPC price.

Project Company has signed an EPC Contract with TBEA Xinjiang SunOasis Co., Ltd. Procedure followed for the selection of EPC Contractor is given in Section 7 of this Tariff Petition.

EPC Contracts have been executed on a fixed price, lump sum, date certain basis. EPC of the Project will be managed through two (02) separate and independent contracts (collectively called "**EPC Contracts**").

In order to successfully move all project related equipment (central inverters skids including transformers, switchgear) from the sea port to the point of installation at the Project Site, a series of roads need to be available. Internal roads within the Power Plant are within the scope of the EPC Contractor, however the availability and condition of roads connecting the Project Site to the nearby city and to the port of Karachi would be important for the safe logistics of all equipment. Distance from Bin Qasim Port to the Project Site is approximately 1125 km. It is the responsibility of the EPC Contractor to transport equipment to the Project Site.

8.3 Land

Project will be constructed on a private owned land of around 309 acres. Agreement for the purchase of land with the private owners has already been executed. Government land in the area for this size of the project is not available therefore Sponsors had to arrange private land for the development, construction and operations of the Project. Registration fee, stamp duty, CVT and all other expenses and charges are not included in the cost of Land and will be charged at actual.

8.4 Duties and Taxes

Customs Duty, Special Excise Duty, Sales Tax, Income Tax, Sindh Infrastructure Development Surcharge (SIDS), Service Tax, other direct and indirect taxes and surcharge what so ever which is imposed by the Government of Pakistan and/or the Government of Khyber Pakhtunkhwa at the time of filing of Tariff application are not being considered in the calculation of Tariff and the same shall be claimed under Tariff as and when paid before COD.

Project Company has assumed zero percent (0%) custom duty regarding imported plant, equipment because Section 18(1A) of the Customs Act 1969 read with Serial 11 to the Part 1 of the Fifth Schedule of the Customs Act 1969, allows Customs Duty at a rate of zero percent (0%) for the following items;

> *"Machinery, equipment and spares meant for initial installation balancing, modernization, replacement or expansion of projects for power generation through nuclear and renewable energy sources lie solar, wind, micro-hydro, bio-energy, ocean, waste-to-energy and hydrogen cell etc..."*

Project Company has also not taken into account the impact (if any) of the KPK Sales Tax on Services. The true implications and procedures with regard to the applicability of KPK Sales Tax on Services are not clear at this time, however, in case the said Sales Tax on services become applicable on any portion of the EPC Contract, then the calculated impact will be adjusted against output sales tax on electricity sales receipts (post COD) and there will be no impact on the Project Cost because of provincial sales tax on services.

However, in case of change in law by virtue of which if either (a) federal sales tax applicable on procurement of plant, machinery and equipment becomes applicable, or (b) provincial sales tax

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on services does not remain adjustable against sales tax charged on sale of electricity, the same will be requested to be adjusted in the Project Cost and Tariff allowed at COD/Tariff true-up stage.

8.5 Pre-COD Insurance

Pre-COD insurance cost covers the insurance cost of Project Company's assets during construction as well as the cost incurred prior to COD. Project Company will solicit offers from leading local insurance companies and international leading insurance companies in due course.

The Project Company, in view of the practices set by the other IPPs in Pakistan and in accordance with the requirements set out by the lenders funding the project, intends to procure following insurances during the construction phase of the Project;

- Construction, erection all risk insurance (CEAR)/ Third party liability
- Marine cargo – delay – in startup insurances
- Terrorism insurance
- Workmen's compensation insurance
- Group personal accident
- Motor comprehensive insurance

Pre-COD Insurance is assumed as 0.5% of EPC Cost.

8.6 Security Arrangement Cost

Pakistan is going through a tough time with respect to security situation in the country. This is one of the major impediments to attracting foreign investments. The Project Company is also concerned about the security of its personnel. Therefore, security arrangement cost becomes one of the important components of the Project Cost. This represents the costs associated with providing security at offices, accommodation, and site; and also including for expatriates engaged by Sponsors, lenders, and contractors for the Project. Project Company will hire the services of a dedicated security manager to oversee and monitor the security related matters along with other security staff.

The Project is located in District D.I. Khan of Khyber Pakhtunkhwa Province of Pakistan. Project Site is at a high security zone and in order to provide security to the Chinese personnel involved in the construction and operations of the Project and to the Sponsors based out of South Africa and United Kingdom, a high level security arrangements would be required.

The Khyber Pakhtunkhwa Province is divided into seven Divisions, each under an appointed Commissioner, and the Divisions are subdivided into twenty-six districts, comprising twenty-one Settled Area Districts and five Provincially Administered Tribal Area (PATA) Districts. The administration of the PATA districts is the responsibility the President of Pakistan and the Governor of Khyber Pakhtunkhwa.

The Project Site is located 15 km west of the village of Kulachi, or 60 km due west of the town of D.I. Khan, the administrative headquarters of the district which, in turn, lies 290 km southwest of the federal capital, Islamabad. Kulachi falls into one of the Settled Area Districts, which is governed by mainstream Pakistani law. The South Waziristan district in the Federally Administered Tribal Areas (FATA) is to the west of the DI Khan district.

As there is a threat of terrorism and sectarian violence throughout Pakistan. The main terrorist threat comes from Tehrik-e Taleban Pakistan (TTP) and various terrorist groups based in Afghanistan as they cross the border of Pakistan and enters into Pakistan for terrorist activities. The FATA is a semi-autonomous tribal region in north-western Pakistan directly governed by Pakistan's federal government through a special set of laws called the Frontier Crimes Regulations (FCR). Government of Pakistan has also initiated the process of merger FATA into Khyber Pakhtunkhwa Province.

The site does not fall within the FATA and city of D.I.Khan is at the border of South Waziristan.

In terms of the security risk, Sponsors have received a No-Objection Letter from Pakistan Army to construct the Project in that area. Furthermore Project Company has also the support of the provincial government, which includes support from the military and Frontier Cor. The military has made themselves available for further discussion on the security of the Project Site, which we would be taken up after the Project receives a Letter of Support (LOS) from Pakhtunkhwa Energy Development Organization (PEDO)/AEDB.

Security during the construction will be the responsibility of the EPC contractor. The Law Enforcement Agencies of Pakistan will provide security outside the IPP boundaries and any security inside or for employees is the sponsors' responsibility.

Project Company has engaged three different international third-party security advisors, namely Frontier Services Group (FSG), OGM International and SRM Intelligence and Risk Consulting. These companies have relevant knowledge and have presence in KPK province, to prepare a Master Security Plan for the Project, to specify responsibilities and provide guidance on the process to manage the security during all the project phases, from construction to operations; this will contain, amongst other things:

1) Phase 1 – Project Context: a tailored security threat assessment of the nature and level of security threats in Pakistan, including:
- A detailed threat assessment that outlines the potential threats to the Project, such as the threat of insurgency, threats associated with community hostility, the threat of theft, etc., and then the likelihood of threat due to the presence of the project increasing the opportunity for threat actors;
- An asset register;
- A physical and procedural security review; and
- A vulnerability analysis.

2) Phase 2 – Risk Assessment: mitigations and security measures to be implemented, including:
- A site security review of the proposed PV IPP site;
- An assessment on the criticality of assets and security arrangements during the construction phase of the project; and
- Recommendations about additional control/mitigation measures grouped according to priorities (high, medium, low).

3) Phase 3 – Risk Treatment Plan: taking into account:
- Recommendations from Phase 2 above

The measures outlined above are typical of what is currently being implemented for other international companies in the area.

Because of above, Security cost of the Project would be higher than the security cost of any other solar project in any other area of Pakistan.

8.7 Project Development Cost

The Project Development Cost includes the costs incurred for the purpose of project development and includes all cost, fees, and expenses incurred or to be incurred for such purpose. These costs mainly include the following;

- Feasibility study costs
- Government permits and licenses fees
- Costs related to the guarantees which have been furnished or to be furnished to PEDO/AEDB
- Costs incurred or to be incurred for Project Company incorporation and capitalization
- Consultants fees
- Human resources cost
- Cost of travel

Feasibility study : It includes technical feasibility, electrical and grid inter-connection studies, and geo-technical, & topographical studies, environmental studies and other technical studies.

Government permits and licenses fee : It includes various fees to PEDO, AEDB, NEPRA, CPPA, NTDC, PESCO, SECP and Environment Protection Agency (EPA).

It also includes bank guarantee charges for obtaining LOI from PEDO, performance guarantee charges for issuance of LOS, and seller's L/C to CPPA charges under EPA.

Project Company incorporation and capitalization fee to SECP : The fees relating to Project Company's incorporation and capitalization incurred on the registration of authorized capital of the Project Company with the Securities and Exchange Commission of Pakistan (SECP) are included in this cost head.

Project consulting and advisory fees : The technical, financial and legal consultants, and advisors costs to be incurred by the Project Company during the project development phase are included in this cost head

HR Cost : The HR costs include salaries, wages, and benefits of all staff as follows;

- Management executives
- Technical and operations department
- Commercial and legal affairs department
- Mt department
- Finance department

- Training and human resource department
- Supply and logistic departments

These staff members will be employed by the Project Company at the site and in Islamabad office.

Travel and related cost : The Project Company is incurring and will also incur domestic and international travelling expenses including accommodation cost during development and construction phases of the Project.

Fixed Assets : This includes cost of various instruments, equipment, and other assets (excluding such assets that are supplied under On-shore and Off-shore Contracts) and comprises of:

a) vehicles, office equipment, furniture, electrical appliances;
b) Telecommunication equipment

Cost of Independent Engineer (as required under EPA)_ and Cost of Owner's Engineer required during construction to assist the Sponsors are not included in the total Project Cost and will be paid as per the actuals and will be claimed in COD Stage Tariff.

Break up of Project Development Cost is given below;

Project development cost	USD
Feasibility cost	550,000
Permits/License COST	30,000
Company formation fee	70,000
Project consultants	513,347
Fixed assets	125,000
Security Arrangement Cost	2,000,000
Administration & Other Costs (office etc..)	50,000
HR costs including local and foreign	100,000
Travelling expenses	100,000
Total **Project Development** Cost	3,538,347
Sindh Infra Tax etc..	424,350
TOTAL PROJECT DEVELOPMENT COST	3,962,697

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SECTION-9

PROJECT FUNDING

9.1 Introduction

Total Capital Cost of the Project is estimated to be approximately USD 48,750,000 inclusive of IDC. The Project cost will be financed by a combination of Debt and equity.

The capital structure of the Company is envisaged at a Debt~Equity ratio of 75:25 thus resulting in USD 36,562,500 and USD 12,187,500 as Debt and equity respectively.

Sources of Funds are as follows;

Sources of Funds	% of Project Cost	USD
Debt	75%	36,562,500
Equity	25%	12,187,500
Total Project Cost with IDC	**100%**	**48,750,000**

9.2 Debt Structure

Under the proposed financing structure, Debt will account for 75% i.e. approximately USD 36.562 million, of the total Project Cost including Interest During Construction ("**IDC**"). Debt disbursements are dependent on actual payments to be made to the EPC Contractor, exchange rate between US Dollar and Pak Rupee and Interest Rate on Debt.

Entire Debt will come from a foreign bank in US Dollar. Note that recommended financing structure and associated terms in this application/proposal are based on preliminary responses received recently by the Project Company from the financial markets. In current volatile environment, it is critical to recognize that the financing structure and associated terms are subject to adverse changes in the financial markets and Project parameters.

b) Interest on Debt

Interest payments will start after the commencement of operations of the Project and will be made on semi-annual basis. Interest will be calculated on the basis of actual number of days elapsed in a year of 360 days on the outstanding principal amount of the Facility.

Interest rate will be linked with LIBOR thus it will vary as and when there is a change in LIBOR. Project Company has taken 6.56781% interest rate on the Debt for calculating interest during construction and interest payments after the end of the grace period.

Fixed Interest Rate is given below;

LIBOR	:	2.31781%
Spread	:	4.25000%
Interest rate	:	6.56781%

NOTE: ** Entire benefit will be passed on to the power purchaser, in case final interest rate is lower than the rate used for the calculation of tariff.*

ii) Interest rate is LIBOR based thus total interest rate will change as and when there is a change in LIBOR.

c) Grace Period and Debt Term

i) Grace Period

Grace period starts from the date banks first disburse the funds to the Project Company. The Debt will be obtained with a grace period of 1 year i.e. covering 10 months of construction.

IDC is an estimated figure, however, IDC is subject to change depending on the fluctuations in LIBOR and exchange rate, drawdown schedule and changes in the Project Cost. IDC will be calculated for the period starting from the first drawdown of Debt after the financial closure based on accrued interest for the outstanding Debt on monthly basis.

Interest on Debt will be paid during the construction period on quarterly basis and will be a part of the Total Project Cost (that is referred as IDC in this application).

d) Terms and Conditions

A summary of key terms and conditions is given below;

Terms and conditions	Debt-II, Commercial Banks
Base Currency	US Dollars
Amount (in US Dollars)	36,562,500
Total Tenor	1+ 13 Years
Nature of Interest Rate	Variable
Benchmark Rate	LIBOR
Margin over Benchmark Rate	425 bps
Total Interest Rate	6.56781%
Arrangement Fee	0.5%
Front End Fee	1.5%
Commitment Fee	0.35%

e) Financial Charges

Financial charges cover the costs related to the financing of the Project. Such costs include lenders' arrangement fee, front-end fee, commitment fee, and other related costs.

Landers take one time front end and arrangement fee before the first disbursement.

Commitment fee is charged by the lenders on the undrawn balance of the Debt facility. The commitment fee is calculated according to the Debt schedule of the Project Company.

f) Debt Schedule

Debt schedule is given in Schedule 12.

9.3 Equity Structure

It is estimated that 25% of the total capital cost of the Project i.e. approximately USD 12,187,500 will be funded by the Sponsors in the form of equity.

Sponsors of the Company are funding the development cost and will pay other fees payable on or before the Financial Closure.

Risk perceptions are high in investing in Pakistan's energy sector not only because of the security situation of the country but also considering the issue of the circular Debt. Considering the above, Project Company is filing tariff petition with NEPRA under the Cost-plus regime at a fixed Return on Equity ("**ROE**") of 15%.

In addition to Return on Equity of 15%, Sponsors have also taken Return on Equity During Construction ("**ROEDC**") into account for calculating Tariff of the Project.

Sponsors reserve the right to sell certain percentage of shares of the Project Company to other investors in future, subject to the requirements of the Lenders.

SECTION-10

O&M COST INCLUDING INSURANCE

10.1 O&M Cost

O&M expenses are one of the major unknowns for solar projects in Pakistan. It is imperative to note that O&M costs are not as low in solar projects as perceived by many. Furthermore, unexpected components failure, especially electronic controls, etc have driven up operations and maintenance costs. This is even more critical in Pakistan where the temperature varies and machines have to work in almost full capacity in extreme weathers. Yet these maintenance costs are lesser as compared to overhauling and fuel costs of thermal generators.

10.2 Outsource of O&M during Operations

Sponsors have negotiated the O&M Contract with the selected EPC Contractor of the Project to provide O&M services during the operations under an O&M Contract. The O&M price includes the costs associated with daily operation, scheduled maintenance, routine maintenance, services required for unscheduled maintenance, and any spare parts and consumables required for carrying out the scheduled and routine maintenance.

Project Company has signed O&M Contract with TBEA for the operations and maintenance of Project for first 5 years of operations.

10.3 Other operating cost

O&M Cost also includes the following;

i) **Fixed Assets:** This includes cost of vehicles, office equipment, furniture, electrical appliances, and tools required at site.

ii) **Payroll and Allied Expenses:** Payroll costs include salaries and benefits of corporate office (CEO, CFO, COO etc...). These staff members will be employed by the Project Company at the site and in Karachi office.

iii) **Security Arrangement Cost:** Due to volatile law and order situation, security arrangements are very important and a vital subject. The Project will depute a full time security team at its site office. The foreign staff of manufacturers and investors who visits or will visit the Project Site for work will also be provided security cover during their stay in Pakistan.

iv) **Vehicle Fuel and Maintenance:** This component includes the costs associated with running and maintenance of vehicles at the Karachi and site offices of the Project Company. The vehicles include vehicles required by the security personnel for securing the site; vehicles required for supervision and coordination of O&M activities, vehicles for administration needs. The vehicles purchased during the construction period will be used for first 5 years of the O&M period. At the start of the 6th year, the old vehicles will retire and new vehicles will be procured by the Project Company in each year as depreciated and worn off vehicles will be laid off.

v) **Administration Costs:** This portion of the O&M cost includes costs associated with rents, utilities, travelling, entertainment, audit, legal and financial consultants, technical consultation, generation license fees, and other allied expenses of running the offices during operations.

10.4 Insurance

Project has assumed 0.50% of the EPC Price as insurance cost. Insurance cost component of tariff will be adjusted only on account of US $/PKR exchange rate variation annually, not exceeding the insurance cost actually incurred.

SECTION-11

INDEXATIONS, ESCALATIONS AND ADJUSTMENT

11.1 Indexation

Various components of tariff are adjusted on pre-determined formula and reference parameters. IPPs are not required to approach NEPRA for tariff indexation. The purpose of indexation is to remove any exposure of investors to cost escalations, over the life of the Project, over which they have no direct control. With that principle in mind, the following sections discuss the proposed indexation for various components of the tariff. Indexation formula have been prepared taking into account the NEPRA's recent determinations and the provisions of the standard drafts of the implementation agreement and the energy purchase agreement.

11.1.a Foreign Exchange

A foreign exchange indexation is applied to those cost elements that are dominated in foreign currency (US $). For these items, the investors have no control over cost changes caused by exchange rate fluctuations, and these are therefore passed through to power purchaser. The proposed tariff structure for the Project implies that the following components will be indexed to variations in foreign exchange rate (Rs./ US$);

- O&M component;
- The insurance component as discussed previously will provide cover on a replacement cost basis, which will be incurred in US dollars. Premium will therefore be constructed on that basis, and insurance cost will therefore fluctuate with exchange rate movements;
- The ROE and ROEDC component that reflects the equity investment in foreign currency (USD).

Indexation for these components will be applied quarterly, on January 1, April 1, July 1, and October 1 on the basis of the TT & OD selling rate as notified by the National Bank of Pakistan (in Rs/ US $). In the event of discontinuation of TT&OD selling rate by the NBP or introduction of another regime by the State Bank of Pakistan (SBP) for determination of the exchange rate, NEPRA will be asked to substitute the mechanism with another mechanism thus it does not place the Project Company in a worse position.

11.1.b LIBOR

The investors have no control over changes in interest rates. Appropriate indexation will be applied.

Debt will be adjusted with the changes in London Interbank Offer Rate (LIBOR). This portion will be adjusted bi-annually for variations in the 6 month LIBOR.

11.1.c Foreign Inflation

O&M component is denominated in US Dollars thus will be adjusted with changes in US inflation, United States Consumer Price Index (US CPI), as published monthly by the department of Labor, United States Government.

A summary of indexation requested is given below; Different components of the tariff are escalated/ indexed on the following basis;

Energy Payment	Variation in...
Fixed O&M	US CPI & USD
Insurance	USD
Return On Equity & Return on Equity During Construction	USD
Debt	LIBOR

11.2 Indexation and Adjustment Factors

Indexations and adjustment factors will be determined by NEPRA from time to time (for each Quarter, Semi-Annual Period or the year, as applicable) and notified in the official gazette by government of Pakistan.

From and after the Commercial Operations Date, indexation formulas as given in the standardized Energy Purchase Agreement (EPA) duly issued by AEDB will be applied.

11.3 Fiscal Incentives

GoP is offering a number of fiscal incentives under the policy framework. These fiscal incentives include exempting private power companies from corporate income tax, relief from import duties on plant and equipment, and guaranteed repatriation of equity and dividends derived from the power plant.

11.4 Indexation Formulas

Indexation formulas approved in the precedent cost-plus tariff decisions on Solar Projects issued by NEPRA and already executed and signed Energy Purchase Agreements with CPPA (G) shall be applied on the Project.

SECTION-12

PROJECT ASSUMPTIONS AND TARIFF

The Petitioner's proposed tariff has been worked on the basis of following non-exhaustive list of certain assumptions - any change in relation thereto will require an appropriate adjustment in the proposed tariff:

1. Lender requirements for energy estimation is based on P90 otherwise financing is not available. Capacity Factor of 19.43% is assumed for calculating the Project Tariff which is taken from an independent third party study conducted by 3E whereas Sponsors have selected top of the line and best available technology.

2. As Project is assuming solar resource risk therefore there would be no monthly benchmark fixed capacity payments whereas Off-taker will pay monthly energy payments to the Project Company. Therefore, Tariff is calculated on the basis of probability of exceedence of P90.

3. Annual average degradation of 0.5% is assumed in calculating annual average capacity factor.

4. No sharing of any excess energy produced by the Project is assumed therefore entire energy generated over and above the annual average capacity factor will be priced at the respective year's total Tariff. Since the downside revenue risk is entirely borne by the Sponsors therefore, any upside is also assumed to be credited to Sponsors thus it will motivate to produce maximum energy with a high quality plant.

5. The Power Producer (i.e. Project) will assume the solar resource risk.

6. Annual energy yields are calculated for exceeding probability levels @ P90 and units produced in a year are 85,117 MWh.

7. Project cost of USD 48,750,000 and Debt~Equity ratio of 75~25.

8. Insurance during construction is 0.5% of EPC Cost.

9. 100% of Debt has been assumed to be financed through foreign financial institution.

10. Interest rate for foreign currency Debt is assumed at 6.76425%.

11. ROE of 15% is assumed (exclusive of 7.5% withholding tax on dividends) over 25 years. The ROEDC will be accrued at the time of COD according to the actual schedule of equity injection.

12. Exchange Rate (PKR/US$) is taken @ PKR 115 per 1 US$.

13. Taxes (Federal, Provincial, Local or district), stamp duties and levies etc. are not factored in the Tariff calculation and will be claimed separately under Tariff thereafter project cost

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in the tariff will be adjusted accordingly or will be treated as Pass-Through items in term of EPA.

14. No customs duties, FED sales tax, income tax and Sindh Infrastructure tax have been considered for imports. Similarly, customs duties on spare parts after COD will be considered "Pass-Through" to the Power Purchaser.

15. Sindh Infrastructure Development Surcharge on the import for the Project has not been assumed, however, it will be adjusted at the time of actual shipment and thereafter project cost in the tariff will be adjusted accordingly.

16. 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.

17. Deduction of withholding tax is assumed only in 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.

18. 7.5% withholding tax on dividend is assumed. Tariff doesn't include withholding tax of 7.5% and will be claimed to Off-taker as and when dividend is paid. 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 "

19. The Zakat deduction on dividends (currently 2.5%), if levied, will be considered as "Pass-Through".

20. The Power Purchaser will exclusively be responsible for the financing for the construction, operation and maintenance of the interconnection and transmission lines as per the prevailing policy at the time of tariff determination.

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

22. Any other assumptions that are not expressly stated herein but are identified at the time of finalization of EPA between the Petitioner and the Power Purchaser may lead to changes in the Reference Generation Tariff.

23. 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.

24. Any incentives given to any other Solar IPP will also be given to the Project and the Petitioner.

25. The Petitioner will be entitled to raise further and additional grounds at subsequent stage and at the time of tariff hearing.

26. In the Tariff no adjustment for certified emission reductions has been accounted for. However, upon actual realization of carbon credits, the same will be distributed between

the power purchaser and the power producer in accordance with the government policy, as amended from time to time;

27. The Tariff will be applicable for a period of twenty five years (25) from the commencement of commercial operations.

ADJUSTMENTS AT COD

NEPRA is requested to allow the adjustments (as set out in this Section (Adjustments at COD)) to the Reference Generation Tariff at the time of true up at COD;

ADJUSTMENTS TO PROJECT COST

It is submitted that the Project Cost be adjusted: at COD for the following assumptions. The adjustments to the Project Cost to be reflected in the relevant tariff components (Return on Equity and Debt Servicing):

a. US$ / PKR exchange rate variations during the construction period;

b) All such Project Cost, which are subject to be adjusted, as per actual

c) All local Duties and Taxes paid or withheld;

d) Arrangement and commitment fee charges and any other fees/charges by the Lenders of the Project;

e) Interest during Construction for increase in Project Cost, change in interest base rate (LIBOR), variation in Debt & equity drawdowns;

f) Return on Equity during Construction including ROEDC at 15% based on actual equity drawdown.

Pass-Through Items

In addition to the pass-through items stipulated in the standardized EPA (with its Schedules) and in the Petition herein, any taxes, duties and levies etc. not factored in the tariff calculation will be treated as part of the Project cost at the time of COD. Any direct and indirect taxes (federal and provincial) taxes currently applicable or impose before and after COD of the Project on the O&M Operator will be considered as Pass Through Item as per the terms of EPA.

PROJECT TARIFF

Based on certain assumptions, below tariff is calculated @ P90.

Year	O&M Rs/kwh	Insurance Rs/kwh	RoE Rs/kwh	RoE-DC Rs/kwh	Debt Rs/kwh	Tariff Rs/kwh
	1.2970	0.3293	2.4699	0.2124	5.7087	10.0174
2	1.2970	0.3293	2.4699	0.2124	5.7087	10.0174
3	1.2970	0.3293	2.4699	0.2124	5.7087	10.0174
4	1.2970	0.3293	2.4699	0.2124	5.7087	10.0174
5	1.2970	0.3293	2.4699	0.2124	5.7087	10.0174
6	1.2970	0.3293	2.4699	0.2124	5.7087	10.0174
7	1.2970	0.3293	2.4699	0.2124	5.7087	10.0174
8	1.2970	0.3293	2.4699	0.2124	5.7087	10.0174
9	1.2970	0.3293	2.4699	0.2124	5.7087	10.0174
10	1.2970	0.3293	2.4699	0.2124	5.7087	10.0174
11	1.2970	0.3293	2.4699	0.2124	5.7087	10.0174
12	1.2970	0.3293	2.4699	0.2124	5.7087	10.0174
13	1.2970	0.3293	2.4699	0.2124	5.7087	10.0174
14	1.2970	0.3293	2.4699	0.2124	-	4.3087
15	1.2970	0.3293	2.4699	0.2124	-	4.3087
16	1.2970	0.3293	2.4699	0.2124	-	4.3087
17	1.2970	0.3293	2.4699	0.2124	-	4.3087
18	1.2970	0.3293	2.4699	0.2124	-	4.3087
19	1.2970	0.3293	2.4699	0.2124	-	4.3087
20	1.2970	0.3293	2.4699	0.2124	-	4.3087
21	1.2970	0.3293	2.4699	0.2124	-	4.3087
22	1.2970	0.3293	2.4699	0.2124	-	4.3087
23	1.2970	0.3293	2.4699	0.2124	-	4.3087
24	1.2970	0.3293	2.4699	0.2124	-	4.3087
25	1.2970	0.3293	2.4699	0.2124	-	4.3087
Levelized Tariff (Rs)	1.2970	0.3293	2.4699	0.2124	4.4674	8.7761
Levelized Tariff (US Cents)	1.1279	0.2864	2.1478	0.1847	3.8847	7.6314

1US Dollar = 115.00 Pak Rupees

DEBT REPAYMENT PROFILE

Repayment Schedule of Debt is given below;

Semi-Annual	Opening Principle	Principle	Interest	Installment	Closing Principle
	36,562,500	911,961	1,200,678	2,112,639	35,650,539
2	35,650,539	941,909	1,170,730	2,112,639	34,708,629
3	34,708,629	972,841	1,139,798	2,112,639	33,735,789
4	33,735,789	1,004,788	1,107,851	2,112,639	32,731,001
5	32,731,001	1,037,784	1,074,855	2,112,639	31,693,217
6	31,693,217	1,071,864	1,040,775	2,112,639	30,621,353
7	30,621,353	1,107,063	1,005,576	2,112,639	29,514,290
8	29,514,290	1,143,418	969,221	2,112,639	28,370,872
9	28,370,872	1,180,967	931,672	2,112,639	27,189,905
10	27,189,905	1,219,748	892,891	2,112,639	25,970,157
11	25,970,157	1,259,804	852,835	2,112,639	24,710,353
12	24,710,353	1,301,175	811,465	2,112,639	23,409,178
13	23,409,178	1,343,904	768,735	2,112,639	22,065,275
14	22,065,275	1,388,036	724,603	2,112,639	20,677,238
15	20,677,238	1,433,618	679,021	2,112,639	19,243,620
16	19,243,620	1,480,697	631,942	2,112,639	17,762,923
17	17,762,923	1,529,322	583,318	2,112,639	16,233,601
18	16,233,601	1,579,543	533,096	2,112,639	14,654,058
19	14,654,058	1,631,414	481,225	2,112,639	13,022,645
20	13,022,645	1,684,988	427,651	2,112,639	11,337,657
21	11,337,657	1,740,321	372,318	2,112,639	9,597,336
22	9,597,336	1,797,472	315,167	2,112,639	7,799,864
23	7,799,864	1,856,499	256,140	2,112,639	5,943,365
24	5,943,365	1,917,465	195,174	2,112,639	4,025,900
25	4,025,900	1,980,432	132,207	2,112,639	2,045,468
26	2,045,468	2,045,468	67,171	2,112,639	(0)
		36,562,500	18,366,117		

SECTION-13

PROJECT TARIFF ANALYSIS

Following are the unique elements of the Project, which not only distinguish it from the other solar projects in the country' but are also beyond the control of the Sponsors;

1. The Project is first solar power project in KPK Province and successful implementation of this Project will open new avenues for investors to invest in the solar power projects in the province. This will also create a number of jobs in the area, which will help eradicating poverty and improving law and order situation in the area in particular and in the province in general;

2. Project has lower solar irradiation at the Project Site (i.e. 19.43%) as compared to other solar projects currently being developed in other parts of Pakistan (i.e. average 22.21%). Total annual generation of the Project is lower than the total annual generation of other same sized solar power projects. The impact of lower solar irradiation on the levelized tariff of the Project is approximately 1 Cents/kWh;

3. Project is situated in a high security zone and Frontier Corps KPK and Pakistan Army would be engaged for the projection of Chinese Engineers, Expats and Sponsors (mainly from South African and United Kingdom). Due to this, cost of security of the personnel and Project increases significantly as compared to other solar projects currently being developed in other parts of Pakistan;

4. Distance of Project Site from Bin Qasim Port is almost 1125km (aprox.) and transporting equipment from Bin Qasim Port to Kulachi area of KPK Province will increase the cost of transportation as compared to transporting equipment from Port Qasim Port to Sindh and Punjab. The impact of higher cost of transportation and security on the levelized tariff of the Project is approximately 0.6 Cents/kWh;

5. No government land for this size of a solar power project is available in D. I. Khan. The Project Site is only 15 km away from the grid station, which was one of the reasons for selecting the site. In case Project site is far away from the grid then it would also increase the cost of NTDC's transmission line. Therefore Sponsors have arranged the private owned land for the Project. DC Rates for the land acquisition have also been obtained from the DC Office D. I. Khan;

6. US LIBOR has recently increased significantly. US LIBOR of 1.694% was considered for determining tariff of all other solar power projects whereas KSP has assumed 6 months US LIBOR of 2.31781%. The impact of higher US LIBOR on the levelized tariff of the Project is approximately 0.2 Cents/kWh.

Due to above mentioned unavoidable reasons and factors beyond the control of the Sponsors of the Project, capital cost and levelized tariff of the Project is slightly higher than the already approved capital cost and levelized tariff by NEPRA for other solar power projects. Therefore, while keeping all the above factors constant, capital cost and levelized tariff of the Project is equivalent to other same sized solar power projects having Tariffs by NEPRA.

SECTION-14

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:

1. The Project Costs and related arrangements stated in this Petition be allowed to the Petitioner;

2. Energy production estimate of 85.117 GWh per annum @ P90 for calculation of the tariff and energy payments;

3. The Power Purchaser be directed to execute Energy Purchase Agreement after the issuance of Tariff;

4. Funding of the Project on a 75:25 - Debt: Equity ratio;

5. 100% of the Debt will be arranged in foreign currency from a foreign bank;

6. Sharing of any CER related revenues subsequently realized, as per the Government of Pakistan policy;

7. ROE of 15% (exclusive of 7.5% withholding tax) along with Return on Equity during Construction Period is assumed, reasons for which have been provided in detail in Section 9 above;

8. Indexations and adjustments for the individual tariff components, as detailed in Section 12 above;

9. The Reference Generation Tariff provided under Section 12 above along with individual tariff components and Debt schedule provided under Section 12 above;

10. Adjustments at COD, as provided under Section 12;

The Applicant would be pleased to provide any other information/assistance that the learned Authority may require in the matter of tariff petition.

This Application and its Annexures are being submitted in triplicate.

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.

We hope that the information provided above meets your requirements, and we remain available to assist you if you have any further quarries.

Respectfully submitted for and on behalf of the Applicant;

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