



SIACHEN ENERGY LIMITED

ENERGY FOR A BETTER TOMORROW

SEL/MKS/NEPRA/18-0012

January 29, 2018

The Registrar

National Electric Power Regulatory Authority
NEPRA Office Building,
Sector G-5/1,
Ataturk Avenue (East),
Islamabad

Subject: Application for Tariff Determination on Cost-Plus Basis

Dear Sir

I, Muhammad Kashif Shamsi, being the duly Authorized Representative of Siachen Energy Limited, by virtue of the Board Resolution dated January 11, 2018, hereby submit a tariff petition for 100 MW_p Solar PV Power Plant being set-up at Mirpur Sakro, District Thatta, Sindh (the "Project") and request for National Electric Power Regulatory Authority's ("NEPRA") approval.

I certify that the documents-in-support attached with this application are prepared and submitted in conformity with the provision of NEPRA Tariff Standards and Procedure Rules 1998, and undertake to abide by the terms and provisions of the said rules. I further undertake and confirm that the information provided in the attached documents-in-support is true and corrected to the best of my knowledge and belief.

A Bank Draft in the sum of Rs. 917,280/- (Rupees Nine Hundred and Seventeen Thousand, Two Hundred and Eighty Only), bearing no. 00004847, being the non-refundable application processing fee calculated in accordance with NEPRA (Fees pertaining to Tariff Standards and Procedure) Regulations, 2002, is also attached herewith.

I hereby further request the Authority to determine the tariff petition for the Project.

You are requested to please acknowledge receipt.

Thanking you.

Yours Sincerely,

Muhammad Kashif Shamsi
Director

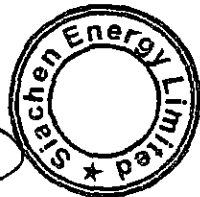
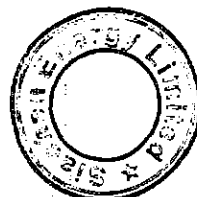


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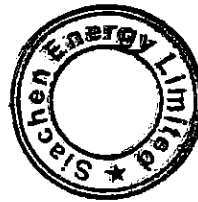
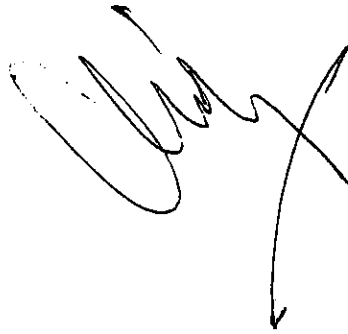
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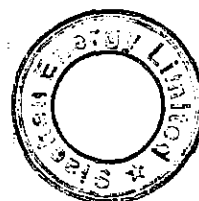
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List of Acronyms

AC	Alternating Current
BNEF	Bloomberg New Energy Finance
BOO	Build, Own and Operate
BoP	Balance of Plant
Bps	Basis points
COD	Commercial Operations Date
CPEC	China Pakistan Economic Corridor
CPI	Consumer Price Index
CPPA-G	Central Power Purchasing Agency (Guarantee) Limited
DC	Direct Current
EPA	Energy Purchase Agreement
GIS	Grid Interconnection Study
GoPb	Government of Punjab
GW	Gigawatts
HV	High Voltage
IA	Implementation Agreement
km	Kilometres
kWh	Kilowatt Hours
LIBOR	3-Month London Interbank Offered Rate
LOI	Letter of Intent
MV	Medium Voltage
MWh	Megawatt Hours
MW _p	Megawatts
NEPRA	National Electric Power Regulatory Authority
NOC	No Objection Certificate
PEPA	Punjab Environmental Protection Agency
PKR	Pakistan Rupees
PPDB	Punjab Power Development Board
PR	Performance Ratio
PV	Photovoltaic
RMU	Ring Main Units
SCADA	Supervisory Control and Data Acquisition
USD	United States Dollars



I. DETAILS OF THE PETITIONER

NAME AND ADDRESS

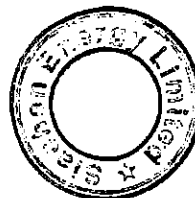
Siachen Energy Limited

Address: 74, J-Street, Off Khayaban-e-Muhafiz, Phase VI, D.H.A., Karachi,
75500, Pakistan

REPRESENTATIVES OF SIACHEN ENERGY LIMITED

Mr. Muhammad Kashif Shamsi

Director, Siachen Energy Limited



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II. PROJECT BACKGROUND AND REGULATORY PROCESS LEADING TO TARIFF PETITION

a. Project Background

The Project Company "Siachen Energy Limited" ("SEL" or "the Company") was incorporated in June 2015 with the vision to setup a 100 MW_p Solar PV Power Plant at Taluka Mirpur Sakro, Gharo, District Thatta, Sindh ("the Project") to address the electricity demand-supply gap in Pakistan.

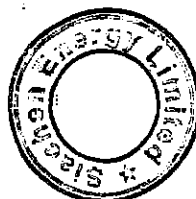
The Directorate of Alternative Energy ("DAE"), Energy Department Government of Sindh ("GoS"), under the applicable Policy for Development of Renewable Energy for Power Generation 2006 (the "Policy"), issued a Letter of Intent (the "LOI") for the Project on August 28, 2015, further extended till April 09, 2018 (copies attached). Subsequent to the issuance of the LOI, the Project Sponsors proceeded with the development milestones of the Project by appointing reputable financial, technical and legal consultants for completion of requisite studies and analysis, including the Feasibility Study, Grid Interconnection Study ("GIS"), etc. It is pertinent to mention that Gharo, Thatta District, Sindh, constitutes mostly of remote and desert areas and the Project will have a positive impact in the development of the area.

Subsequent to the above-mentioned developments, the Company, on June 21, 2017, applied for Generation License to National Electric Power Regulatory Authority ("NEPRA") vide letter SEL/CEO/NEPRA/16-0006 and the same was approved on October 10, 2017 (Ref: *NEPRA/DL/LAG-357/16787-93*); copy attached as Annexure-3 and Annexure-4.

b. National Electric Power Regulatory Authority – the Competent Authority for determination of Tariff

NEPRA Act and NEPRA Rules

Under the Regulation for Generation, Transmission and Distribution of Electric Power Act (XL of 1997 (the "NEPRA Act"), NEPRA is responsible, *inter alia*, for determining tariffs and other terms and conditions for the supply of electricity through generation, transmission and distribution. NEPRA is also responsible for determining the process and procedures for reviewing tariffs and recommending tariff adjustments. Further, pursuant to the enabling provisions of the NEPRA Act, the procedure for tariff determination has been prescribed in the NEPRA (Tariff Standards and Procedure) Rules, 1998 (the "NEPRA Rules").



c. Letter of Intent, Approval of Feasibility Study

Issuance of "Letter of Intent"

GoS issued the LOI to the Project (vide letter No. DAE/Solar/81/2015, copy attached as Annexure-3) dated August 28, 2015. The Company submitted the requisite Bank Guarantee in the sum of USD 50,000/- (US Dollar Fifty Thousand Only), in favour of the DAE. The LOI was further extended to April 09, 2018 (vide letter No. DAE/Solar/81/2015/113, dated May 12, 2017, copy attached as Annexure-4), and the Bank Guarantee was also extended accordingly.

Submission of the Feasibility Study and approval of the same

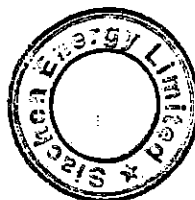
In compliance with the requirements of the LOI, the Sponsor completed the detailed feasibility study for the Project and submitted the same to DAE, GoS. For a number of reasons, the Project was unable to avail the upfront tariffs offered by NEPRA for solar projects. Following the expiration of such tariffs, the Sponsor has decided to file for a cost-plus tariff of the Project with NEPRA.

d. Project Chronology

Approvals / Consents	Dates
Incorporation Certificate, SECP	June 01, 2015
Letter of Intent (LOI), Government of Sindh	August 28, 2015
Grid Interconnection Study Submission	December 12, 2015
Application for Feasibility Study Approval by Panel of Experts ("POE")	March 17, 2016
1st LOI Extension, GoS	May 12, 2017
Environmental approval	January 13, 2016
HESCO's Interconnection Study Approval and Consent from Power Purchaser	October 31, 2016
Approval of Grid Interconnection Study, NTDC	May 26, 2017
NTDC Power Evacuation Certificate	July 25, 2017
Issuance of Generation License	October 10, 2017

e. Submission

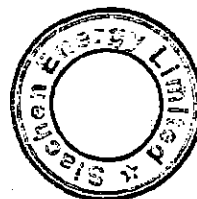
PURSUANT TO the relevant provisions of the NEPRA Rules, read with the provisions of the NEPRA Act and the rules and regulations made thereunder; AND in accordance with the Policy; AND in view of compliance by SIACHEN ENERGY LIMITED of the Policy in respect of meeting the requirements of the same so as to be eligible for application for a tariff: SIACHEN ENERGY LIMITED



SUBMITS HEREWITH before NEPRA, the competent regulatory authority lawfully authorized to determine tariff for solar power generation companies, for its approval, a tariff petition (the "Tariff Petition") for approval of (i) the reference generation tariff – a twenty five (25) year Project tariff (the "Reference Generation Tariff"); (ii) the energy production estimates; (iii) the Indexations and Adjustments; (iv) Adjustments at commercial operations date ("COD"); and (v) other matters set out in this Tariff Petition, in each case, for SIACHEN ENERGY LIMITED's Project (*i.e.*, a 100 MW_p solar power generation facility to be located at Taluka Mirpur Sakro, Gharo, District Thatta, Sindh).

The tariff to be determined by NEPRA will be incorporated in the Energy Purchase Agreement ("EPA") to be entered into by and between the Project Company and Central Power Purchasing Agency (Guarantee) Limited ("CPPA-G" or "Power Purchaser").

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.



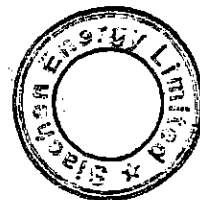
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III. KEY FEATURES OF THE PROJECT

General Information of the Power Plant	
Name of the Project Company	Siachen Energy Limited
Name of the Power Station	Gharo-New 132 kV Grid Station
Installed Capacity	100 MW _p
Installed under Policy	Policy for Development of Renewable Energy for Power Generation 2006
Project Type	Independent Power Producer
Executing Agency	Directorate of Alternative Energy, Energy Department, Government of Sindh
LOI Details	Issued by DAE, GoS
Basis	Build, Own, Operate
Location (Region, District, Province)	Taluka Mirpur Sakro, Gharo, District Thatta, Sindh
Type of Tariff	Cost-plus
NEPRA's Applicable Rules/Regulations	NEPRA (Tariff Standards and Procedure) Rules, 1998
Type of Technology	Mono-crystalline
Site Specific Features	Desert, fallow land
Special Technological Features	Tier 1 Modules
Contract Type	Take or Pay, Long-term EPA
Power Purchaser	CPPA-G
Period of the Contract	25 years
Construction Mode	Turnkey EPC
LA Status	To be entered following issuance of Letter of Support by GoS AEDB
Sovereign Guarantee	Applicable
EPA Status	To be entered following issuance of Letter of Support by AEDB
Requested Levelized Tariff for a contract period	PKR 6.6086 per kWh

a. Project Technology & Plant Factor

The Company has selected PV Module "Eagle 1500V-JKM345M-72-V" for the Project. It is considered as the state of the art in the Photovoltaic technology with the IEC 61215, IEC 61730 certification. Its maximum voltage is promoted to 1500V and the module strings are extended by 50% which reduces the overall system BOS. This new technology adapts 4 busbar solar cells to improve the efficiency of modules, offer a better aesthetic



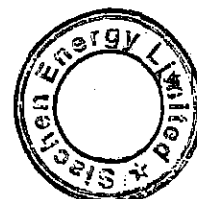
appearance, making it perfect for grid connected systems. In addition, it has higher module conversion efficiency (up to 17.78%) benefit from Passivated Emitter Rear Contact (PERC) technology. Furthermore, The Eagle module can pass maximum voltage 1500V PID testing under 60°C/85% RH condition to ensure the outdoor durability and energy output via high-voltage resistance technology. Also, its advanced glass and solar cell surface texturing allow for excellent performance in low-light environments. Hence, This PV Modules series is compatible with 1500V plant architectures, gives highly predictable energy in all climates and applications, and is independently certified for reliable performance in high temperature, high humidity, extreme desert and coastal environments.

SEL has chosen single axis tracking technology over conventional fixed tilt system which increases the annual energy yield by approximately 20% compared to fixed tilt. Its features include flexible rotary drive shafts which enable a great slope tolerance, self-lubricating bearing and full sealing gear assembly equipped to cater to outdoor environments, making it maintenance free and innovative self-calibration system that allows each row to work independently with up to $\pm 1^\circ$ tracking accuracy.

Sungrow SG2500U-MV (integrated MV transformer and low auxiliary power supply) has advanced three level technology with maximum inverter efficiency of 98.8%. It also has effective cooling with 1.1 overload capacity and has no derating up to 5°C with degree of protection of NEMA 3R making it suitable for harsh environment conditions. In addition, it complies with the UL1741, UL1741 SA, IEEE 1547, Rule 21 and NEC code. Furthermore, it provides support to the Grid including L/HVRT, L/HFRT, soft start/stop, specified power factor control and reactive power support. The AC Output from inverters at 550V will be stepped up through internal MV Step-up transformer to 33kV. Thereafter, this output will be further stepped up from 33kV to 132kV through 132kV Step-up Transformers. For this purpose, a complete substation will be established at the Project Site.

By using above mentioned technologies the Capacity Utilization Factor is estimated to be 20.89% at GHI of 1,992 kWh/m²/year and is the maximum achievable plant factor.

The plant will use a SCADA System to supervise, control and acquire data from the equipment. The SCADA system will be supported by six (6) weather stations spread over different areas of the plant. All the equipment pertinent to SCADA system will be in accordance with the best industry practice standards.



b. Project Site

The site is in the southern part of the Sindh province, about 65 km east of Karachi (24.56 °N; 67.71 °E). A total land area of approximately 586 acres has been allocated for the Project. The closest airport is the Jinnah International Airport (50 km from the site) and the closest highway is the N-5 National Highway (23 km from the site).

c. Interconnection

A 132kV double circuit line has been proposed from the complex to the Gharo-New 132kV Grid Station for the evacuation of power with an interconnection length of 18km.

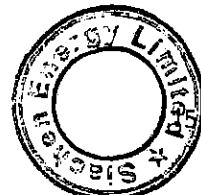
d. Sponsor Introduction

Mr. Muhammed Sohail Shamsi is the Chief Executive Officer, major shareholder and main sponsor of SEL. Mr. Shamsi holds a Bachelor's Degree in Business Administration from the University of Texas, Arlington, USA. He brings with him over the 35 years of investment, management and consulting experience. Mr. Shamsi possesses deep understanding and knowledge of crude oil refining and marketing sector and as well as power sector. His latest venture in the power sector has been the development of a gas-fired 28 MW captive power plant set-up within the premises of Indus Refinery Limited.

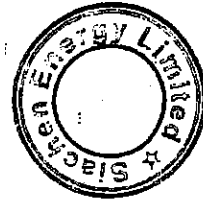
Mr. Shamsi is also the Chairman and Chief Executive Officer of Indus Refinery Limited - A Crude Oil refinery being set-up in Pakistan, the Chairman & Chief Executive Officer of ICON Energy Limited which is setting up a LPG & Oil Products storage terminal at Port Qasim, Karachi. He is also a Director of Samad Enterprises (Private) Limited - a Trading company and Siachen Builders & Developers - a construction company. All the above-mentioned companies are registered in Pakistan.

Mr. Shamsi also holds the office of Director at Tabbaar Trading Company LLC, Dubai - a Trading House dealing in supply of commodities, electronics, automobile and tractors spare parts. He is a Founding Director & Chairman of Tameerat, Dubai - a Construction and Real Estate Marketing Company, currently constructing a Twin Tower Complex of 31 Floors each, by the name of "AL-Hambra 1 & AL-Hambra 2", in Emirates City, Ajman.

He is also working on projects of introducing Electric Scooters & Motor Cycles in the Pakistan Market, to reduce the carbon foot print in the major



cities of Pakistan and create healthy environment for new generations to come.

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IV. Proposed Tariff and Indexations

a. The proposed tariff is summarized as follows:

Component PKR per kWh	Yr. 1-14	Yr. 15-25	Applicable Indexations
Fixed O&M (Foreign)	0.6828	0.6828	US CPI, PKR/USD
Fixed O&M (Local)	0.1205	0.1205	Pakistan CPI
Insurance	0.2467	0.2467	PKR/USD on 1 st day of each agreement year
Return on Equity	2.1060	2.1060	PKR/USD
Debt Servicing	4.2542	0.0000	PKR/USD, LIBOR
Total	7.4102	3.1561	
Levelized (PKR cents per kWh)		6.6086	
Levelized (US cents per kWh)		6.2939	

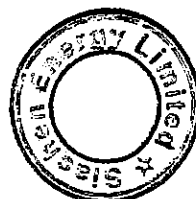
b. Reference Dates and Rates

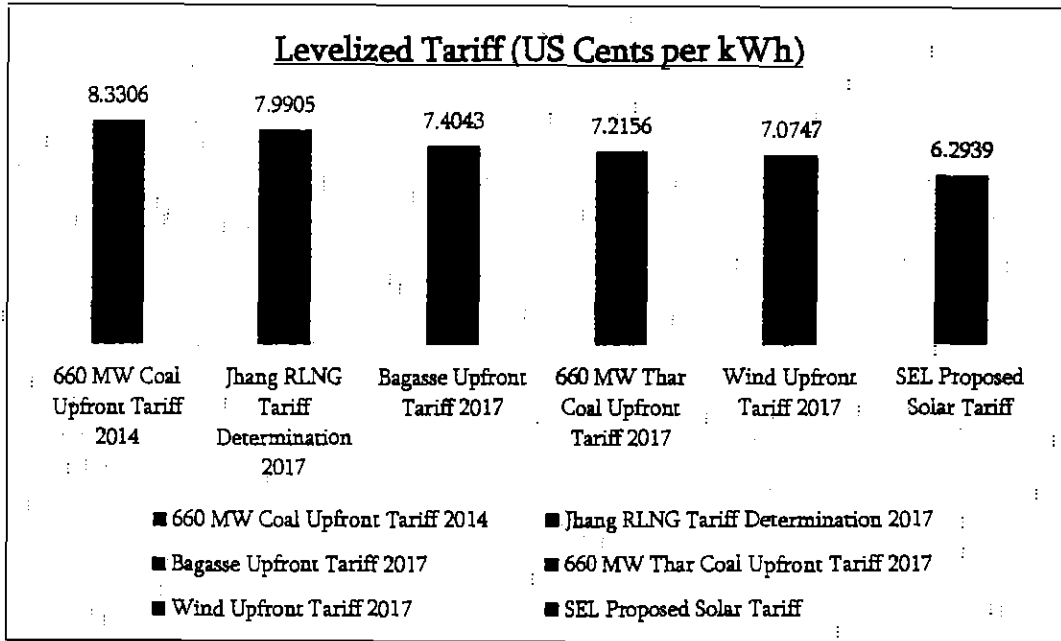
The following reference dates/rates have been assumed with respect to the above indexations:

PKR/USD	105.00
3-month LIBOR	1.70%
US CPI – December 2017	247.96
Pakistan CPI – December 2017	220.20

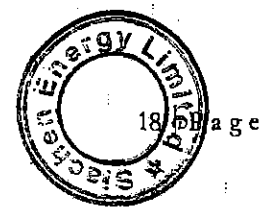
c. Comparative Tariffs

The proposed tariff by the Company (adjusted or otherwise) is the lowest tariff for any power generation project based on any other energy resource. Furthermore, the Project is based on an indigenous resource eliminating the need for any foreign exchange requirement for imported fuel thereby significantly reducing the impact on the basket price due to PKR devaluation. A comparison of the Project tariff with wind, bagasse, imported coal, Thar coal and RLNG projects is provided below. (*Note: Financing and other assumptions have been normalized while conducting the analysis.*)





The above analysis takes into account 3M LIBOR at 1.70%, spread of 4.00% for projects that have SINOSURE-backed debts and 4.50% that do not have SINOSURE-backed debts. KIBOR (where applicable) has been assumed at 6.14%. As is evident from the graph above, SEL has the lowest tariff when compared to other energy sources and is significantly lower compared to the levelized tariff of US cents 9.4511 per kWh (South Region) proposed in the Suo Moto proceedings for New Tariff for Solar PV Power Projects dated June 14, 2016.



V. Key Underlying Assumptions of the Proposed Tariff

a. Project Cost Assumptions

Following is the estimated capital cost of the Project:

Break-Up of Project Cost	USD Million
EPC Cost	86.00
Non-EPC & Development Costs	4.91
Land Cost	2.69
Insurance during Construction	Incl. in EPC
Financing Fees and Charges	1.65
Interest during Construction	2.63
Total Project Cost	97.88
Total Project Cost per MW _p	0.979

(i) EPC Cost

The Company has entered into an EPC Contract with Power Construction Corporation of China Limited (Off-shore EPC) and Hydrochina International Engineering Company Limited (On-shore EPC) on November 05, 2017. Being experienced in implementing power projects across the globe, EPC Contractor has access to international technical resources and parts distribution network, and network and have agreed to commit the same to the Project as part of their obligations set out in the EPC Agreement.

EPC Bidding Process

For the purpose of selection and finalization of EPC Contractor for the Project, the Company has undertaken a transparent bidding procedure, whereby the Company has entered into separate contracts for the Project design, supply of equipment, and construction, installation and commissioning services. For the selection of contractors for the supply of equipment and construction, installation and commissioning services, a comprehensive procurement process was followed, which included issuance of a Pre-qualification Bid Document on February 05, 2017, issuance of a Request for Proposal ("RFP") to Prequalified Contractors on March 30, 2017, technical & financial evaluation of Bids received by the Company against the RFP issued, and negotiation & finalization of contracts with selected bidder.

Accordingly, based on the evaluation conducted as mentioned above, the following contractors were selected for supply of equipment and construction, installation and commissioning services, and a contract was signed in November 05, 2017:



- Power Construction Corporation of China Limited, for Off-shore EPC Contract; and
- Hydrochina International Engineering Company Limited, for On-shore EPC Contract.

EPC Cost Break-Up

Following the bidding process, the Company after extended negotiations with the lowest bidder has been recently able to finalize the EPC price at a total cost of USD 86.00 million. Indicative breakdown of EPC cost is as follows:

Offshore Contract Price:	USD 73.10 Million and
Onshore Contract Price:	USD 12.90 Million.

(ii) Duties, Taxes and other Levies

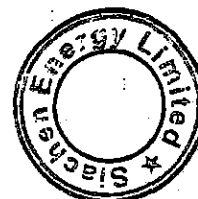
No custom duties, sales tax, withholding tax, infrastructure cess or other any form of tax/levy/duty has been assumed on the import of equipment for the Project. It is requested that the Authority allow recovery of any such taxes or levy through a one-time adjustment at COD based on verifiable documentary evidence.

No sales tax or withholding tax has been assumed on services (off-shore or on-shore) rendered by contractors for the purpose of the Project. It is proposed that the Authority allow recovery of taxes of a non-refundable nature for the Project Company through a one-time adjustment at COD based on verifiable documentary evidence.

Furthermore, any duties, charges or taxes in excess thereof (or any new taxes, charges or duties) or not listed above shall be either treated as pass-through to the Power Purchaser or a one-time adjustment at COD shall be allowed. Federal or provincial sales tax adjustable against output tax on electricity shall not form a part of this adjustment.

(iii) Non-EPC and Development Costs

Project Development Costs are costs that are not included in the scope of the contractor and costs that will be incurred by the Project up till COD. These include the cost of salaries, office rentals, travel, utilities and other establishment costs. Other Project Development Costs include cost of feasibility study and its component studies, as well as fees for legal counsel, technical consultant, financial advisor, independent engineer and owner's engineer, training, regulatory/legal fees, etc.



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Project Development Cost	USD Million
Administrative Costs	1.99
Consultancies & Technical Studies	0.93
Regulatory/Legal Fees	0.59
Site Development	0.57
Travelling Costs	0.28
Independent Engineer	0.03
Others	0.52
Total	4.91

1. Administrative Costs

The Sponsor will coordinate the development of the Project through its Karachi and Project Site office at Taluka Mirpur Sakro, Gharo, District Thatta. The administrative costs include costs related to rent, utilities, accounting and admin staff, in-house technical team to oversee development of the Project, stationery, vehicle fuel and maintenance and other related expenses during the development period.

2. Consultancies & Technical Studies

This cost includes the advisors engaged by the Sponsor, and costs associated with the related studies for the Project. The Sponsor has engaged reputable consultants to ensure bankability of the Project from all aspects.

3. Travelling Fees

This cost covers travelling and related expenses for staff during the development and construction of the Project.

4. Regulatory/Legal Fees

Expenses related to NEPRA fees, incorporation fees paid to Securities and Exchanges Commission of Pakistan ("SECP"), permit fees payable to various authorities and related expenses.

5. Site Development

Expenses related mainly to site preparation including ground levelling and clearing & grubbing, site access costs, etc.

6. Independent Engineer

The Sponsor is required to engage an Independent Engineer pursuant to the signing of the EPA. The Sponsor will hire an Independent Engineer,



with the approval of the Power Purchaser, to monitor construction and commissioning of the Project.

7. Others

Expenses related mainly to office equipment and other office related expenses for the Karachi Office and Project Site office.

(iv) Insurance during Construction

Construction period insurance shall be procured as per the standardized energy purchase agreement for solar projects. These include construction all-risk; marine cargo, third party liability and delay in start-up policies. Insurance during Construction has been budgeted as part of the EPC Cost.

(v) Financing Fees and Charges

Financing fees and charges have been budgeted at 2.24% of the total debt amount (excluding any sales or withholding taxes). The above amount includes but is not limited to charges related to upfront fees, arrangement fees, commitment fees, letter of credit charges, pre-COD agency and security trustee fees. Any taxes related to the above may be incorporated at COD through a one-time adjustment. If there is any change to the above the Authority is requested to allow a one-time adjustment at actuals.

(vi) Interest during Construction

Interest during Construction ("IDC") has been calculated with the assumption of a 12-month construction period, 75:25 debt to equity ratio and based on financing from Chinese financial institutions. A base rate of 1.70% (3-month LIBOR) plus a spread of 350 basis points ("bps") has been assumed. IDC calculations have been based on the following disbursement schedule with disbursements assumed at the beginning of the period.

Quarter	Debt Drawdown
1	25%
2	65%
3	5%
N	5%

IDC shall be subject to adjustments based on firm offer from lending banks and the actual disbursement schedule. In addition, interest shall be subject to adjustment for variation in LIBOR on a quarterly basis.



Financing currently assumes a quarterly debt (principal and interest) servicing frequency and corresponding 3-month LIBOR. In case banks require a bi-annual debt servicing, the repayment schedule shall be amended with a corresponding 6-month LIBOR.

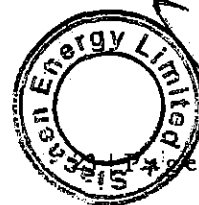
(vii) SINOSURE Fee

The Project intends to raise financing from Chinese banks therefore, export credit insurance, to be provided by SINOSURE, will be applicable. The Authority is requested to allow the SINOSURE premium as pass-through at actuals.

b. Capital Structure Assumptions

The Project is to be funded based on a debt-to-equity ratio of 75:25. Based on the financial structure the Sponsor shall subscribe to an equity of USD 24.47 million in the Project, while USD 73.41 million will be raised from Chinese financial institutions through long-term debt. A summary of the proposed capital structure is given in the table below:

Financing Assumptions	
Total Project Cost	USD 97.88 Million
Total Project Cost	PKR 10,277.25 Million
Capital Structure	
Debt	USD 73.41 Million
Equity	USD 24.47 Million
Debt % of Total Project Cost	75%
Equity % of Total Project Cost	25%
Construction Period	12 Months
Grace Period	1 Year
Loan Tenor	14 Years
Loan Repayment Frequency	Quarterly
Return on Equity	15.00%
Operating Insurance Cost – % of Total EPC	0.50%
Exchange Rate – USD	PKR 105.00
LIBOR	1.70%
Spread over LIBOR	3.50%
Discount Rate	10.00%



c. **Financing Cost Assumptions**

Loan repayment period of 14 years after COD has been assumed with 56 quarterly, mortgage-style, fixed-annuity instalments for purposes of financing. The interest cost is based on financing from Chinese financial institutions at a rate of 3-month LIBOR plus 350 bps per annum, subject to confirmation from the lenders.

On a quarterly basis, adjustments shall be made on account of variation in LIBOR and PKR/USD exchange rate.

Financing currently assumes a quarterly debt servicing frequency and corresponding 3-month LIBOR. In case banks require a bi-annual debt servicing, the repayment schedule shall be amended with a corresponding 6-month LIBOR.

d. **Return on Equity (ROE)**

The return on equity component is based on an annual rate of 15%, which is below the rate typically allowed by the Authority. Return on Equity during Construction (ROEDC) has not been included in the proposed Project tariff and is requested that the same may be incorporated in the Project tariff based on actual equity disbursements and the ROE rate of 15% per annum.

e. **Operations and Maintenance**

Annual Operations and Maintenance cost has been assumed at USD 1.40 million for the Project. The Sponsor has proposed an annual O&M cost of USD 14,000 per MW which is much lower than the cost of USD 27,005 per MW proposed by NEPRA in the Suo-moto proceedings held in May 2016. Specific third-party security costs related to the Project are not included in the budgeted amount.

A summary of estimated O&M costs is as follows:

Item	Estimated Cost
Fixed O&M Cost	USD 1.40 Million
<i>Fixed O&M – Foreign</i>	85%
<i>Fixed O&M – Local</i>	15%

The above is expected to cover costs related to routine, scheduled and major maintenance; staff salaries and benefits; corporate overheads and other miscellaneous costs.



f. Insurance during Operations

Operating period insurance shall be procured as per the standardized energy purchase agreement for solar projects. These include all-risk; machinery breakdown, third party liability and consequential loss policies. Insurance during Operations has been budgeted at 0.50% of the EPC Cost.

g. Other Key Assumptions

- (i) The timing of drawdown of debt and equity may vary from those specified in this Petition; as such, the Project Cost may be adjusted on the basis of actual IDC at COD;
- (ii) Similarly, adjustments in Project Cost due to variation in PKR/USD variations and LIBOR fluctuations may also be catered for at the time of COD;
- (iii) ROEDC has not been included in the Project Tariff. The same is requested to be allowed as a one-time adjustment at COD;
- (iv) Terms regarding LIBOR, payment frequency, and financing fees and charges are as per the indicative term sheet and are subject to finalization;
- (v) No custom duties, sales tax, withholding tax, infrastructure cess or other any form of tax/levy/duty has been assumed on the import of equipment for the Project or onshore/offshore services related to the Project. It is requested that the Authority allow recovery of any such taxes or levies being of non-refundable nature through a one-time adjustment at COD based on verifiable documentary evidence.

h. Pass-Through

- (i) The payments to Workers Welfare Fund and Workers Profit Participation Fund and Employees Old Age Benefits and Pension Contributions, Gratuity Contributions have not been accounted for in the Project budget and have been assumed to be pass-through at actual to the Power Purchaser;
- (ii) Zakat deduction on dividends as required under Zakat Ordinance is considered as pass-through;
- (iii) No tax on income of Project Company (including proceeds against sale of electricity to CPPA-G/ NTDC) has been assumed. Corporate tax, turn over tax, general sales tax/provincial sales tax, and all other taxes, excise duty, levies, fees etc. by any federal/provincial entity



including local bodies as and when imposed, shall be treated as pass-through;

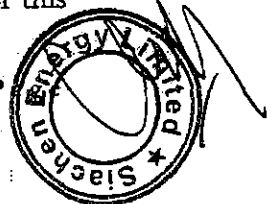
- (iv) Any Excise Duty, Other Duty, levy, charge, surcharge or other impositions under the applicable laws whether Provincial or Federal not considered in the tariff will be treated as pass-through under the EPA;
- (v) No hedging cost is assumed for exchange rate fluctuations during construction and all cost overruns resulting from variations in the exchange rate during construction shall be allowed as pass-through;
- (vi) Any costs incurred by Project Company, which are required to be incurred by the Power Purchaser pursuant to provisions of EPA, shall be treated as pass-through;
- (vii) Cost incurred or suffered by the Project Company for any change in general assumptions on account of a requirement of the Power Purchaser shall be considered as a pass-through item.

i. Carbon Credit

The Clean Development Mechanism (the "CDM") is one of the flexible, project-based mechanisms for greenhouse gas emission reductions (the "GHG") under the Kyoto Protocol. By using the CDM, two (2) countries can jointly develop GHG emission reductions projects. While the project proponents in the host country sell the emission reductions from the project as Certified Emission Reductions (the "CERs"), project participants in the partner country act as the CER buyer. In this set-up, the host country of the project benefits from domestic investment and technology transfer. For the owners of the CDM project, selling CERs means additional revenues to the project. Each CER represents one ton of carbon dioxide equivalent abated by the project.

The CDM was initiated under the Kyoto Protocol of the United Nations Framework Convention on Climate Change (the "UNFCCC") in order to explore cost-effective options to mitigate the impacts of climate change. It is one of the instruments that help the developing countries in achieving sustainable development, while at the same time contributes to the ultimate objective of the UNFCCC. CDM assists the developing countries to implement project activities that reduce GHG emissions in return for generating carbon credits / CERs.

Pakistan deposited its instrument of accession to the Kyoto Protocol on January 11, 2005, and thus become eligible to benefit from CDM. For this



purpose, the Ministry of Environment has been declared as the Designated National Authority (the "DNA"). A "CDM Cell" was established in Pakistan in August 2005 for providing technical and policy support to conduct awareness raising, enhancement of capacity for CDM project development, review of CDM projects for grant of approval by the DNA and to advise the Government of Pakistan in technical matters related to CDM in Pakistan. It was also established to implement the CDM strategy.

Pakistan national operational strategy for CDM was approved by the Prime Minister of Pakistan in February 2006. The strategy provides policy guidance for implementation of CDM in Pakistan in line with national sustainable development goals. It is an incentive-based strategy that ensures efficiency and transparency. The strategy defines institutional arrangement for implementation of CDM in Pakistan, tax and credit sharing policy and the criteria grant of host country approval to CDM projects.

While it appears that the project may be able to realize monetary gains from such carbon credit schemes, the actual timing, amount, and other details of the outcome are quite uncertain at this point. It is thus proposed that the Reference Generation Tariff for the Project be approved irrespective of the outcome of the carbon credits.

However, if any CER related revenues are realized, it is submitted that they will be shared as per the policy of the Government of Pakistan.

In light of the foregoing submissions, the Project Company requests the learned Authority to kindly approve the proposed generation tariff together with the pertinent indexations to remain effective for a period of 25 years from COD on a fast-track basis.

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

For and on behalf of SEL

Muhammad Kashif Shamsi
Director



REFERENCE GENERATION TARIFF

Year	PKR/kWh						Total Tariff	
	Foreign O&M	Local O&M	Insurance	ROE	Interest Payment	Loan Re-Payment	PKR/kWh	US cents/kWh
1	0.6828	0.1205	0.2467	2.1060	2.1497	2.1045	7.4102	7.0573
2	0.6828	0.1205	0.2467	2.1060	2.0381	2.2161	7.4102	7.0573
3	0.6828	0.1205	0.2467	2.1060	1.9206	2.3336	7.4102	7.0573
4	0.6828	0.1205	0.2467	2.1060	1.7969	2.4573	7.4102	7.0573
5	0.6828	0.1205	0.2467	2.1060	1.6666	2.5876	7.4102	7.0573
6	0.6828	0.1205	0.2467	2.1060	1.5294	2.7248	7.4102	7.0573
7	0.6828	0.1205	0.2467	2.1060	1.3849	2.8693	7.4102	7.0573
8	0.6828	0.1205	0.2467	2.1060	1.2328	3.0214	7.4102	7.0573
9	0.6828	0.1205	0.2467	2.1060	1.0726	3.1816	7.4102	7.0573
10	0.6828	0.1205	0.2467	2.1060	0.9039	3.3503	7.4102	7.0573
11	0.6828	0.1205	0.2467	2.1060	0.7262	3.5279	7.4102	7.0573
12	0.6828	0.1205	0.2467	2.1060	0.5392	3.7150	7.4102	7.0573
13	0.6828	0.1205	0.2467	2.1060	0.3422	3.9120	7.4102	7.0573
14	0.6828	0.1205	0.2467	2.1060	0.1347	4.1194	7.4102	7.0573
15	0.6828	0.1205	0.2467	2.1060	0.0000	0.0000	3.1561	3.0058
16	0.6828	0.1205	0.2467	2.1060	0.0000	0.0000	3.1561	3.0058
17	0.6828	0.1205	0.2467	2.1060	0.0000	0.0000	3.1561	3.0058
18	0.6828	0.1205	0.2467	2.1060	0.0000	0.0000	3.1561	3.0058
19	0.6828	0.1205	0.2467	2.1060	0.0000	0.0000	3.1561	3.0058
20	0.6828	0.1205	0.2467	2.1060	0.0000	0.0000	3.1561	3.0058
21	0.6828	0.1205	0.2467	2.1060	0.0000	0.0000	3.1561	3.0058
22	0.6828	0.1205	0.2467	2.1060	0.0000	0.0000	3.1561	3.0058
23	0.6828	0.1205	0.2467	2.1060	0.0000	0.0000	3.1561	3.0058
24	0.6828	0.1205	0.2467	2.1060	0.0000	0.0000	3.1561	3.0058
25	0.6828	0.1205	0.2467	2.1060	0.0000	0.0000	3.1561	3.0058
Average								
1-14 Years	0.6828	0.1205	0.2467	2.1060	1.2455	3.0086	7.4102	7.0573
15-25 Years	0.6828	0.1205	0.2467	2.1060	0.0000	0.0000	3.1561	3.0058
1-25 Years	0.6828	0.1205	0.2467	2.1060	0.6975	1.6848	5.5384	5.2747
Levelized								
1 - 25 Years	0.6828	0.1205	0.2467	2.1060	1.1961	2.2565	6.6086	6.2939

Debt Servicing Schedule								
Period	PKR Million					PKR per kWh		
	Principal	Principal Repayment	Interest	Balance	Debt Servicing	Principal	Interest	Debt Servicing
Q1	7,707.94	94.42	100.20	7,613.51	194.62			
Q2	7,613.51	95.65	98.98	7,517.87	194.62			
Q3	7,517.87	96.89	97.73	7,420.98	194.62			
Q4	7,420.98	98.15	96.47	7,322.82	194.62			
Total 1st Year		385.11	393.38		778.50	2.1045	2.1497	4.2542
Q1	7,322.82	99.43	95.20	7,223.40	194.62			
Q2	7,223.40	100.72	93.90	7,122.68	194.62			
Q3	7,122.68	102.03	92.59	7,020.65	194.62			
Q4	7,020.65	103.36	91.27	6,917.29	194.62			
Total 2nd Year		405.53	372.96		778.50	2.2161	2.0381	4.2542
Q1	6,917.29	104.70	89.92	6,812.59	194.62			
Q2	6,812.59	106.06	88.56	6,706.53	194.62			
Q3	6,706.53	107.44	87.18	6,599.09	194.62			
Q4	6,599.09	108.84	85.79	6,490.26	194.62			
Total 3rd Year		427.03	351.46		778.50	2.3336	1.9206	4.2542
Q1	6,490.26	110.25	84.37	6,380.01	194.62			
Q2	6,380.01	111.68	82.94	6,268.32	194.62			
Q3	6,268.32	113.14	81.49	6,155.19	194.62			
Q4	6,155.19	114.61	80.02	6,040.58	194.62			
Total 4th Year		449.68	328.82		778.50	2.4573	1.7969	4.2542
Q1	6,040.58	116.10	78.53	5,924.49	194.62			
Q2	5,924.49	117.61	77.02	5,806.88	194.62			
Q3	5,806.88	119.13	75.49	5,687.75	194.62			
Q4	5,687.75	120.68	73.94	5,567.06	194.62			
Total 5th Year		473.52	304.98		778.50	2.5876	1.6666	4.2542
Q1	5,567.06	122.25	72.37	5,444.81	194.62			
Q2	5,444.81	123.84	70.78	5,320.97	194.62			
Q3	5,320.97	125.45	69.17	5,195.52	194.62			
Q4	5,195.52	127.08	67.54	5,068.44	194.62			
Total 6th Year		498.63	279.87		778.50	2.7248	1.5294	4.2542
Q1	5,068.44	128.73	65.89	4,939.70	194.62			
Q2	4,939.70	130.41	64.22	4,809.30	194.62			
Q3	4,809.30	132.10	62.52	4,677.19	194.62			
Q4	4,677.19	133.82	60.80	4,543.37	194.62			
Total 7th Year		525.07	253.43		778.50	2.8693	1.3849	4.2542
Q1	4,543.37	135.56	59.06	4,407.81	194.62			
Q2	4,407.81	137.32	57.30	4,270.49	194.62			
Q3	4,270.49	139.11	55.52	4,131.38	194.62			
Q4	4,131.38	140.92	53.71	3,990.47	194.62			
Total 8th Year		552.91	225.59		778.50	3.0214	1.2328	4.2542
Q1	3,990.47	142.75	51.88	3,847.72	194.62			
Q2	3,847.72	144.60	50.02	3,703.12	194.62			
Q3	3,703.12	146.48	48.14	3,556.63	194.62			
Q4	3,556.63	148.39	46.24	3,408.24	194.62			
Total 9th Year		582.22	196.27		778.50	3.1816	1.0726	4.2542
Q1	3,408.24	150.32	44.31	3,257.93	194.62			
Q2	3,257.93	152.27	42.35	3,105.66	194.62			
Q3	3,105.66	154.25	40.37	2,951.41	194.62			
Q4	2,951.41	156.26	38.37	2,795.15	194.62			
Total 10th Year		613.09	165.40		778.50	3.3503	0.9039	4.2542
Q1	2,795.15	158.29	36.34	2,636.86	194.62			
Q2	2,636.86	160.34	34.28	2,476.52	194.62			
Q3	2,476.52	162.43	32.19	2,314.09	194.62			
Q4	2,314.09	164.54	30.08	2,149.55	194.62			
Total 11th Year		645.60	132.89		778.50	3.5279	0.7262	4.2542
Q1	2,149.55	166.68	27.94	1,982.87	194.62			
Q2	1,982.87	168.85	25.78	1,814.02	194.62			
Q3	1,814.02	171.04	23.58	1,642.98	194.62			
Q4	1,642.98	173.27	21.36	1,469.72	194.62			
Total 12th Year		679.83	98.66		778.50	3.7150	0.5392	4.2542

Period	PKR Million					PKR per kWh		
	Principal	Principal Repayment	Interest	Balance	Debt Servicing	Principal	Interest	Debt Servicing
Q1	1,469.72	175.52	19.11	1,294.20	194.62			
Q2	1,294.20	177.80	16.82	1,116.40	194.62			
Q3	1,116.40	180.11	14.51	936.29	194.62			
Q4	936.29	182.45	12.17	753.84	194.62			
Total 13th Year		715.88	62.62		778.50	3.9120	0.3422	4.2542
Q1	753.84	184.82	9.80	569.01	194.62			
Q2	569.01	187.23	7.40	381.79	194.62			
Q3	381.79	189.66	4.96	192.13	194.62			
Q4	192.13	192.13	2.50	0.00	194.62			
Total 14th Year		753.84	24.66		778.50	4.1194	0.1347	4.2542
Total 1st to 14th Year		7,707.94	3,191.00		10,898.93			