BEFORE THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

PETITION FOR GENERAL TARIFF

UNDER

NEPRA (TARIFF STANDARDS AND PROCEDURES) RULES 1998

In relation to:
30 MW Solar PV Project

Petitioner:
Asia Energy (Private) Limited

Dated: November 30, 2018

Asia Energy (Private) Limited
A.E.L.
Karachi

Contents

Annexures

1. Letter of Intent (LOI)
2. Extension of LOI
3. Project Feasibility Study Approval
4. Grid Interconnection Study (GIS) Approvals
5. Reference Tariff Table
6. Debt Servicing Schedule
7. Terms of Financing
8. EPC Agreement

Asia Energy (Private) Limited A.E.L. Karachi

I. DETAILS OF THE PETITIONER AND PROJECT BACKGROUND

NAME AND ADDRESS

Asia Energy (Private) Limited

D-52, Block 4, Clifton, Karachi, 75600, Pakistan

REPRESENTATIVE OF ASIA ENERGY (PRIVATE) LIMITED

Mir Shahzad Khan Talpur

Chief Executive Officer

PROJECT SPONSPOR

Asia Petroleum Limited (APL)

PROJECT ADVISORS

- 8.2 Obst & Ziehmann International GmbH — Technical Consultants
- RIAA Barker Gillette — Legal Advisors

PROJECT BACKGROUND

Asia Energy (Private) Limited (the Project Company) was incorporated with the vision to setup a 30 MWp Solar PV Power Plant at Noorsar, District Bahawalnagar, Punjab (the Project).

LOI for the Project was issued by Alternate Energy Development Board (AEDB) under the Policy for Development of Renewable Energy for Power Generation 2006 (the Policy). On issuance of the LOI, the Project Sponsor proceeded with the development milestones of the Project by appointing reputable consultants for completion of requisite studies and analysis.

Asia Energy (Private) Limited A.E.L. Karachi

II. REGULATORY PROCESS LEADING TO TARIFF PETITION

a. Letter of Intent and other steps

AEDB issued the LOI to the Project vide letter No. B/3/2/SPV/LOI-053 dated August 3, 2015. The Project Sponsor submitted the requisite bank guarantee in the sum equivalent to USD 15,000 (US Dollars Fifteen Thousand Only), in favor of the AEDB. The validity of LOI was subsequently extended. Copies of LOI and subsequent extensions are enclosed as Annexure 1 and 2.

In compliance with the requirements of the LOI, the Project Sponsor completed the GIS and the detailed feasibility study for the Project and submitted the same to relevant authorities for approval. Approvals are enclosed as Annexure 3 and 4. Following is the chronology of significant milestones:

Milestone	Date
LOI issued by AEDB	August 3, 2015
Incorporation of Project Company	November 6, 2015
GIS submission to Central Power Purchasing Agency (Guarantee) Limited (CPPA)	January 14, 2016
Approval of Feasibility Study by AEDB	February 28, 2017
1st LOI Extension, AEDB	March 21,2017
Environmental approval	June 14, 2017
Approval of GIS by Multan Electric Power Company (MEPCO)	July 6, 2017
Approval of GIS by National Transmission and Despatch Company (NTDC)	September 19, 2017
2nd LOI Extension, AEDB	January 24, 2018

Asia Energy (Private) Limited A.E.L. Karachi

b. **Submission to National Electric Power Regulatory Authority (NEPRA) - the Competent Authority for determination of Tariff**

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).

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 view of compliance by the Project Company, submits herewith before NEPRA, the Competent Authority lawfully authorized to determine tariff for solar power generation companies, a tariff petition (the Tariff Petitinn) for approval of:

- the reference generation tariff - a twenty five (25) year Project tariff (the Reference Generation Tariff);
- the energy production estimates;
- the indexations and adjustments;
- adjustments at Commercial Operations Date (COD); and
- other matters set out in this Tariff Petition for the Project.

Asia Energy (Private) Limited A.E.L. Karachi

III. KEY FEATURES OF THE PROJECT

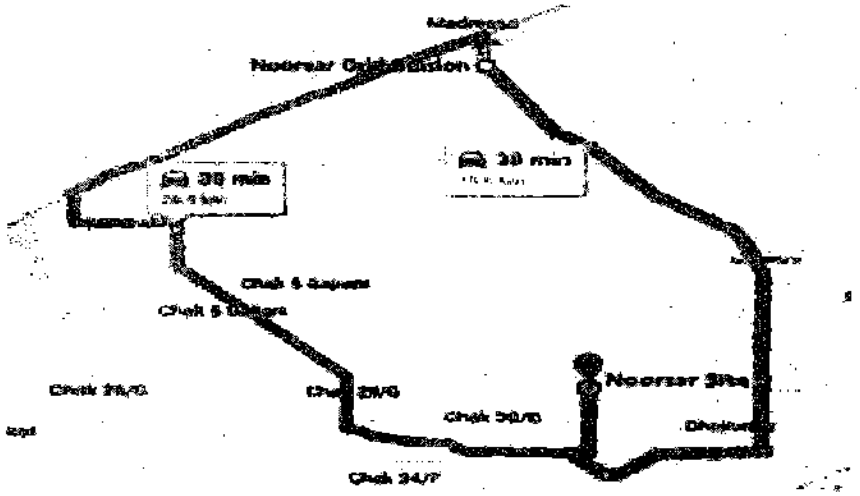
Project Company	Asia Energy (Private) Limited
Project Sponsor	Asia Petroleum Limited
Capacity	30 MWp
Project Type	Independent Power Producer (IPP)
Applicable Policy	Policy for Development of Renewable Energy for Power Generation 2006
Applicable Tariff Regulations	NEPRA (Tariff Standards and Procedure) Rules, 1998
LOI issued by	AEDB
Contract Type	Take or Pay, 25 years EPA
Power Purchaser	CPPA
Basis	Build, Own, Operate
Location	Noorsar, District Bahawalnagar, Punjab
Construction Mode	Turnkey EPC
EPC Contractor	Consortium of CSUN Solar International (CSUN) and China Construction Installation Engineering Co. Ltd. (CCIEC)
O&M Contractor	CSUN Energy Pakistan (Pvt.) Ltd.
Technology	Solar PV
PV Modules	Polycrystalline
Mounting Structure	Single-axis tracking
Inverter	Central
Interconnection	132kV Grid
Energy Yield	58.37 GWh

a. Project Sponsor Introduction

Asia Petroleum Limited (APL) is an energy infrastructure company, headquartered in Karachi, Pakistan. It is a joint venture between Pakistan State Oil Company Limited (PSO) (49%), Pakistan and three foreign shareholders (cumulatively holding 51%) namely Infraavest Limited, Hong Kong, Independent Petroleum Group, Kuwait and VECO International Incorporation, USA. APL owns and operates an oil terminal and a pipeline system to transport Residual Fuel Oil (RFO) from Pipri, Karachi to Hub Power Company Limited, a 1292 MW Independent Power Plant located in Baluchistan province of Pakistan. Since its commissioning in 1996, it has been adding value to Pakistan's energy sector through provision of high quality environment-friendly and cost-effective fuel transportation services, while ensuring full compliance with standards of health, safety and quality assurance. APL with its multi-disciplinary and highly experienced team of professionals is committed to excellence in customer service and fulfillment of corporate responsibility.

b. Project Location

The site is in Noorsar, District Bahawalnagar, Punjab (29.825 N; 73.080 E). A total land area of approximately 205 acres has been earmarked for the Project. The closest airport is in Bahawalpur (200 km from the site) and the closest highway is 20 km from the site.



c. EPC Contractor

A transparent bidding procedure was carried out in accordance with NEPRA (selection of Engineering, Procurement and Construction contractor by independent Power Producers) Guidelines 2017. The project was advertised through two international and four local newspapers as well as on four international tender websites. Subsequently, 21 contractors applied for Pre-Qualification out of which 17 were prequalified. The prequalified contractors were invited to bid. The bid from the consortium of CSUN

Solar International and CCIEC (**China Construction Installation Engineering Company**) being technically acceptable and lowest price was selected. Therefore, this consortium was finalized as the EPC Contractor for the project. Brief profile of both the consortium partners is stated below:

CSUN is one of the leading manufacturer of solar cells and modules and is a subsidiary of China Electric Equipment Group (CEEG). The CEEG group is one of the top two manufacturers of electrical transformers in China and also manufactures advanced composite materials used in the construction of aircraft and other transportation systems. CSUN has extensive experience in the PV industry and is known for outstanding innovation, efficiency and quality. Initially, CSUN was focused solely on cell manufacturing and supplied cells to leading European solar modules manufacturers. CSUN has a solar module production capacity of 1.2 GW and has sold over 3.0 GW of modules. CSUN ventured into EPC business in 2015 and has since successfully commissioned Solar Projects in various countries including Pakistan.

CCIEC is a specialized engineering subsidiary of China State Construction Engineering Corp., which is one of the Global Fortune 500 Companies. CCIEC has four main business sectors of chemical, high-end MEP, steel manufacture and infrastructure. In Pakistan it has worked as subcontractor for various renewable energy projects with different EPC Contractors.

d. Project Technology

PV Modules

CSUN's modules have demonstrated outstanding levels of performance in world-renowned laboratory tests as well as during their use in actual projects, providing customers with both high energy yields and excellent returns on their investments. PV Module selected for the project is "CSUN330-72P" which has certifications such as IEC 61215 and IEC 61730.

Inverter

Inverters from one of the largest manufacturer Sungrow have been selected for the project. Sungrow model SG1250 with advanced three level topology and maximum inverter efficiency of 99% has been selected.

Asia Energy (Private) Limited A.E.L. Karachi

Mounting Structure

State of art technology has been selected for mounting structures. Single axis tracking technology will be deployed which increases the annual energy yield considerably compared to fixed tilt.

Monitoring System

The plant will use a SCADA system to supervise, control and acquire data from the equipment. The SCADA system will be supported by three (3) weather stations equipped with 2 pyranometers each spread over different areas of the plant. All the equipment pertinent to SCADA system will be in accordance with the best industry practice standards.

e. Interconnection

A 132kV double circuit line has been proposed from the complex to the Noorsar 132kV Grid Station for the evacuation of power with an interconnection length of 12 km.

f. Operations & Maintenance (O&M)

O&M Contract for the first two years has been signed with CSUN Energy Pakistan (Private) Limited, an associated company of the lead partner in the EPC Consortium. Decision to continue with the same contractor, to change the contractor or to carryout O&M in-house will be taken at an appropriate later stage.

g. Energy Yield

Based on the selected technologies and Global Horizontal Irradiance of 1859 kWh/m^2/year, the estimated first year yield of the plant at P50 is estimated to be 58.37 GWh i.e. capacity factor of 22.21%. The system degradation shall not exceed 0.5% per annum as approved by the Authority for other projects.

IV. PROPOSED TARIFF AND INDEXATIONS

Proposed Tariff

The proposed tariff by the Project Company is one of the lowest tariff compared to power generation based on other energy resources. Furthermore, the Project is based on

Asia Energy (Private) Limited A.E.L. Karachi

an indigenous resource eliminating the need for any foreign exchange requirement for imported fuel. The proposed tariff is summarized as follows:

Component	Yr. 1-10 PKR/KWh	Yr. 11-25 PKR/KWh	Applicable Indexations
O&M	0.8277	0.8277	US CPI, PKR/USD & Pakistan CPI
Insurance	0.2269	0.2269	PKR/USD
Return on Equity	2.1914	2.1914	PKR/USD
Debt Servicing	5.3247		
Total	8.5707	3.2460	
Levelized (PKR per kWh)		6.8505	
Levelized (US cents per kWh)		5.1047	Reference exchange rate is PKR 134.2

Tariff tables and debt repayment schedule are enclosed as annexure 5 and 6.

V. KEY UNDERLYING ASSUMPTIONS OF THE PROPOSED TARIFFS

a. Project Cost Assumptions

The estimated cost of the project is shown below:

	Category	Cost (USD in millions)
i.	EPC Cost	19.740
ii.	Non-EPC & Development Costs	2.118
iii.	Insurance during Construction	0.041
iv.	Financing Fees and Charges	0.516
v.	Interest during Construction	0.457
	Total Project Cost	**22.872**
	Total Project Cost per MW_p	**0.762**

i. EPC Cost

The scope of work to be carried out by the EPC contractor has been split into two parts, namely, onshore works and offshore works; where offshore works primarily relate to procurement and supply of electrical and mechanical equipment outside Pakistan and onshore works include civil works, erection, commissioning and

Asia Energy (Private) Limited A.E.L. Karachi

testing. Agreements are enclosed as Annexure 8. The breakup of costs contained in the EPC agreements is as follows:

	USD in million
Off Shore	16.841
On Shore	2.899
Total EPC Cost	**19.740**

No custom duties, sales tax, withholding tax, infrastructure cess or any other form of tax levy/duty has been assumed on the import of equipment for the Project. 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 requested that the Authority to allow recovery of all such taxes or levies of non-refundable nature 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 be allowed as a one-time adjustment at COD.

ii. Non-EPC and Development Costs

This head includes the cost for development of Project and land. Breakup is as follows:

Project Development Cost	USD Million
1. Administrative Costs	0.211
2. Consultancies and Technical Studies	0.678
3. Regulatory/Legal Fees	0.149
4. Site Development	0.351
5. Travelling Costs	0.118
6. Land	0.611
Total	**2.118**

Asia Energy (Private) Limited A.E.L. Karachi

1. Administrative Costs

The Project Sponsor will coordinate the development of the Project through its Karachi and Project Site office. 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 and Technical Studies

This represents the cost of advisors engaged by the Project Sponsor for conducting studies and assisting various project development activities including selection of EPC Contractor. The Project Sponsor has eogaged reputable consultants to ensure bankability of the Project from all aspects. It also includes cost of consultants to be engaged for providing support during construction phase.

Moreover, the Project Sponsor are also required to hire an independent engineer with the consent of the power purchaser to monitor the construction and commissioning of the project. This cost is also included in this head.

3. Regulatory/Legal Fees

Expenses include fee, charges and other related expenses paid to various authorities including Securities and Exchanges Commission of Pakistan (SECP), NEPRA, AEDB, etc.

4. Site Develooment

Expenses related to site preparation such as ground levelling, clearing and grubbing, site access costs, etc.

5. Travelling Costs

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

6. Land cost

Land cost has been incorporated in this petition which also includes stamp duty, registration fees, cost of survey, commission and demarcation of the land, legal due diligence and other related costs.

iii. Insurance during Construction

The Project Company, in view of the practices set by other IPPs in Pakistan and to adequately protect the interest of all relevant stakeholders intends to procure appropriate insurances coverage during the construction phase of the Project. The premium considered is 0.5% of the EPC cost, which is comparable to NEPRA's other determinations.

The premiums payable under the above stated Pre-COD insurances, does not include the administrative surcharge, the Federal Insurance Fee and the Federal Excise Duty, in each case, relating to the Pre-COD insurances and the Petitioner prays that the same be allowed by NEPRA as part of the One-Time Adjustments allowed at the time of COD.

iv. Financing Fees and Charges

Financial charges include the costs related to the debt financing of the Project. Such costs include, the lenders' up-front fee and commitment fee, charges related to various letters of credit, fees payable and stamp duty applicable on the financing documents; agency fee; security trustee fee; lenders' Project monitoring fee and the fees for the lenders' various advisors payable upto the COD. Any taxes and levies related to the above may be incorporated at COD through a one-time adjustment. Agency fee and security trustee fee payable annually after the COD has been included in the debt servicing component of the tariff.

v. Interest during Construction

Interest during Construction (IDC) has been calculated with the following assumptions:

Construction Period	10 months
Debt Equity Ratio	75:25
Interest Rate	Fixed rate of 6% p.a.
Financing	SBP Refinancing Scheme for Renewable Energy Project

It has been assumed that Renewable Energy Finance (REF) facility under SBP's Revised Refinancing scheme for Reoewable Energy Project will be available for the entire debt amount. In the event the Project Company is required to procure foreign currency financing or REF is not available for any reason, adjustment for LIBOR/KIBOR based facility with appropriate spread allowed by the Authority in its other determinations shall be allowed. IDC shall be subject to adjustments based on a firm offer from lending banks, the actual disbursement schedule and adjustments/true-ups allowed.

b. Capital Structure Assumptions

The Project is to be funded based on a debt-to-equity, ratio of 75:25. Based oo the finaocial structure the Project Sponsor shall subscribe to the equity, while debt will be raised from financial institutions through long-term debt. Accordingly, a financing term sheet has been obtained from a Bank and is enclosed as Annexure 7. A summary of the proposed capital structure is given in the table below:

Total Project Cost	USD 22.872 Million
Capital Structure Debt – 75% Equity – 25%	 USD 17.154 Million USD 5.718 Million
Construction Period	10 Months
Loan Tenor	Construction Period + 10 Years
Repayment Frequency	Quarterly
Return on Equity	15.00%
Financing	SBP Financing Scheme for Renewable Energy
Interest Rate	6%

c. Operations and Maintenance (O&M)

Annual O&M cost is expected to cover costs related to routine, scheduled and major maintenance, staff salaries and benefits, corporate overheads and other miscellaneous costs. It also includes cost associated with replacement of parts necessitated due to regular operation / normal wear and tear. Total O&M costs considered are USD 0.360 million per annum. O&M cost will be incurred in local as well as foreign currency and breakup of the same are as follows:

- O&M Foreign 50%
- O&M Local 50%

d. Insurance during Operations

Operating period insurance shall be procured as per the standardized EPA 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.

e. Other Key Assumptions

i. The principal repayment and cost of debt be adjusted at COD as per the actual borrowing composition;

ii. The timing of drawdown of debt and equity may vary from those considered in this Petition; as such, the Project Cost may be adjusted on the basis of actual IDC at COD;

iii. Similarly, adjustments in Project Cost due to variation in PKR/USD variations may also be catered for at the time of COD;

iv. Financing terms are as per the indicative term sheet and are subject to finalization;

v. Impact of annual degradation has been accounted for in Return on Equity component of tariff; and

vi. 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.

f. Pass-Through

i. The payments to Workers Welfare Fund and Workers Profit Participation Fund have not been accounted for in the costs and have been assumed to be pass-through at actual to the Power Purchaser;

Asia Energy (Private) Limited A.E.L Karachi

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) has been assumed. Corporate tax, turn over tax, general sales tax/provincial sales tax, and all other taxes, excise duty, levies, fees etc. (not being of refundable nature) by any federal/provincial entity including local bodies as and when imposed shall be treated as pass through;

iv. Any excise or other duty, levy, charge, surcharge or other imposition under the applicable laws whether provincial or federal not considered in the tariff will be treated as pass-through under the EPA;

v. Any costs incurred by the Project Company which are required to be incurred by the Power Purchaser pursuant to provisions of EPA shall be treated as pass-through;

vi. 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.

VI. CARBON CREDITS

Solar Power is a clean form of energy and will reduce CO_2 emission. In case any income is generated from carbon credits, the same shall be shared in accordance with prevailing government policy.

* * * * *