



ENERGY FOR A BETTER TOMORROW

# SIACHEN ENERGY LIMITED

F/A

The Registrar  
National Electrical Power Regulatory Authority  
NEPRA Tower, Ataturk Avenue (East)  
Sector G-5/1, Islamabad

Ref : SEL/NEPRA/2023-008

Date : May 13, 2023

**SUBJECT : SUBMISSION OF THE REVISED TARIFF PETITION FOR OUR 100 MWP SOLAR POWER PROJECT**

Dear Sir,

Please refer your letter # NEPRA/R/TRF-100/9232 dated April 28, 2023 once again returning our Revised Tariff Petition. We reply as under:-

We admit the mistakes we did in submitting the Tariff Petition to the Authority earlier, once again regret the inconvenience and submit herewith, the Company's Revised Tariff Petition for kind consideration and approval by the Authority in accordance, inter alia with section-31 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 read with Rules 3 of the NEPRA tariff Standards and Procedure Rules, 1998 and other applicable provisions of NEPRA law, as follows:

- Revised Tariff Petition (including its Annexures).
- Board Resolution of Siachen Energy Limited.
- Affidavit of Mr. Muhammad Kashif Shamsi.
- Pay Order No. 16575037 dated 17-03-2023 amounting **PKR 1,121,664/- (Pak Rupees One Million One Hundred Twenty One Thousand Six Hundred and Sixty Four only)** already sent vide our letter # SEL/NEPRA/2023-005 dated March 16, 2023.

Yours Sincerely,

Muhammad Kashif Shamsi  
Authorised Signatory  
Siachen Energy Limited

Forwarded please:

☒ For nec action

☐ for information

1. DG (Lic.)	2. DG (Admn./HR)
3. DG (M&E)	4. DG (CAD)
5. DG (Trf.)	6. Dir. (Fin.)
7. Dir. (Tech.)	8. Consultant
9. LA	10. Dir. (IT)

For kind information please

1. Chairman

2. M (Lic.)

3. M (Law)

2. M (Tech.)

4. M (Trf. & Fin)

REGISTRAR OFFICE  
Diary No: 6378  
Date: 17/05/23

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## List of Acronyms

AC	Alternating Current
AEDB	Alternative Energy Development Board, Islamabad
BOO	Build, Own and Operate
Bps	Basis points
CCoE	Cabinet's Committee on Energy, Government of Pakistan
COD	Commercial Operations Date
CPEC	China Pakistan Economic Corridor
CPI	Consumer Price Index
CPPA-G	Central Power Purchasing Agency (Guarantee) Limited
DC	Direct Current
DAE-GoS	Directorate of Alternative Energy, Government of Sindh
EOI	Expression of Interest
EPA	Energy Purchase Agreement
EPC	Engineering, procurement and construction
FC	Financial Close
GIS	Grid Interconnection Study
GW	Gigawatts
HV	High Voltage
IA	Implementation Agreement
IEE	Initial Environmental Examination
Km	Kilometers
kWh	Kilowatt Hours
LIBOR	6-Month London Interbank Offered Rate
LOI	Letter of Intent
LOS	Letter of Support
MoE	Ministry of Energy, Government of Pakistan
MV	Medium Voltage
MWh	Megawatt Hours
NEPRA	National Electric Power Regulatory Authority
NTDC	National Transmission and Despatch Company Limited
PKR	Pakistan Rupees
PR	Performance Ratio
SBCA	Sindh Building Control Authority
SCADA	Supervisory Control and Data Acquisition
SECP	Securities & Exchange Commission of Pakistan
SEL	Siachen Energy Limited (100MWp Solar Power Project)
SEPA	Sindh Environmental Protection Agency
SRB	Sindh Revenue Board
USD	United States Dollars

# Petitioner's Details

## NAME AND ADDRESS

Siachen Energy Limited

## MAILING ADDRESS:

74, J-Street, Off Khayaban-e-Muhafiz, Phase VI, DHA, Karachi, 75500, Pakistan

Tel: +92-21-35156172-38 Fax: +92-21-35156174

## AUTHORIZED REPRESENTATIVE OF PETITIONER:

Mr. Muhammad Sohail Shamsi

Chief Executive Officer

## PROJECT SPONSORS:

Muhammad Sohail Shamsi

## PROJECT EPC CONTRACTOR:

Powerchina International Group Limited

Building 23, Compound 17, Xi Cui Road,

Haidian District, Beijing China

# Project Chronology

Event	Date
Company Incorporation with SECP	June 01, 2015
<b>Letter of Intent (LOI), Government of Sindh</b>	<b>August 28, 2015</b>
1st Application for Upfront Tariff Determination	December 07, 2015
Grid Interconnection Study Submission	December 12, 2015
Environmental Approval by SEPA	January 13, 2016
Approval of Grid Interconnection Study by NTDC	May 26, 2017
2nd Application for Upfront Tariff Determination	June 06, 2017
Application for Generation License	June 21, 2017
<b>NTDC Power Evacuation Certificate</b>	<b>July 25, 2017</b>
<b>Issuance of Generation License</b>	<b>October 10, 2017</b>
3rd Application for Tariff Determination	January 30, 2018
Admission of Revised Tariff Petition for consideration	March 27, 2018
Revised Tariff Petition Hearing	April 19, 2018
<b>Tariff Determination by NEPRA</b>	<b>November 19, 2018</b>
CCoE Meeting held	February 27, 2019
Ministry of Energy (Power Division) Notification listing various Renewable Energy projects approved by CCoE under Cat-I (projects having LOS); Cat-II (projects having LOI and Tariff but no LOS); and Cat-III (projects having LOI but no tariff determination)	March 29, 2019; April 04, 2019
Meeting of AEDB	September 12, 2019
<b>Review Petition filed for Tariff Extension</b>	<b>November 14, 2019</b>
AEDB 49 <sup>th</sup> Board Meeting Minutes issued by Ministry of Energy (Power Division)	February 03, 2020
NEPRA Decision on Review Motion filed for Tariff Extension	March 27, 2020
<b>CCoE Meeting and Approval of project under Cat-II</b>	<b>May 04, 2020</b>
New Tariff Application Filed	June 25, 2020
Application filed for Modification in Generation License due to Change in Technology	July 29, 2020
<b>Issuance of Modification-I in Generation License</b>	<b>January 27, 2021</b>
Revised Tariff Petition Online Hearing	March 17, 2021
<b>Revised Tariff Determination</b>	<b>November 29, 2021</b>
AEDB Letter to the Company to apply for Tripartite Letter of Support (TLOS)	December 02, 2021
<b>Requests, and their reminders, to NTDC to issue New Evacuation Certificate and Approve Grid Interconnection Study on Fresh Date as required by AEDB Letter intimating the Company to submit application for Tripartite Letter of Support (TLOS)</b>	<b>March 08, 2022;</b> <b>March 21, 2022;</b> <b>March 31, 2022;</b> <b>April 11, 2022; and</b> <b>April 25, 2022</b>

# Grounds of Petition

## A. Legal Context

Under the Regulation for Generation, Transmission and Distribution of Electric Power Act (XL of) 1997 (the NEPRA Act), the National Electric Power Regulatory Authority (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).

## B. Project Background

SEL (the "Company" or "Petitioner") is a company duly incorporated under the laws of Pakistan, on 01<sup>st</sup> June 2015, having its registered office located at 74, J Street, Phase VI, DHA, Karachi 75500, for the purposes of undertaking the development, implementation, construction and operation of a 100 MW Solar Power generation facility located at Mirpur Sakro, District Thatta, Sindh (the "Project").

The First Tariff Application, filed on 7 December 2015 for 'Upfront Tariff Determination', was rejected by the Authority as Generation License not issued at that time while another project "Burj Solar" was awarded Tariff without having Generation License.

Second time, another Tariff Application filed on 6 June 2017 was again refused on the grounds that Power evacuation was not available for the project and the application was submitted after expiry of the Upfront Tariff Determination regime. This was again discriminatory as all the wind projects' Tariffs were approved despite not having the evacuation available to those projects. These decisions shacked the investors' confidence and the foreign investors, willing to invest in the project, disappointed and moved away.

In pursuance of development of the Project, the Petitioner was issued a generation license on 10<sup>th</sup> October 2017 by the National Electric Power Regulatory Authority (the "Authority" or "NEPRA").

Third time, after the new 'Cost Plus Tariff' regime was opted, another tariff application on 30 January, 2018 was approved and Tariff Determination was granted on 18 November 2018 with validity of one year to achieve financial close. Based on hearing and submissions the Authority awarded a tariff of US Cents 4.8184/kWh.

However, even after getting the tariff, the project was unable to move forward due to error in listing the project at rightful category by the Ministry of Energy in its notification dated 04 April, 2019 resulted in Tariff expiry on 18 November 2019. The project faced another setback and all the efforts/progress achieved till date remained unfruitful while the costs kept on accumulating in the meantime.

The Company had two distinct projects of 100 MW each - SEL Phase-I and SEL Phase-II. At the time of CCoE's Meeting that approved various the projects in different categories (in February, 2019), SEL Phase-I had achieved the required criteria of having Generation License and Tariff Determination for inclusion in Cat-II as per LOI and as prescribed by the Ministry of Energy. As regards SEL Phase-II, who only received the LOI and was supposed to be listed under Cat-III. However, in the notification dated 4 April, 2019 from the MoE both SEL Phase-I and SEL Phase-II were mistakenly listed under Cat-III.

As per paragraph V of the cited CCoE decision, all projects that have been issued LOIs, granted tariff and issued a generation license by NEPRA (projects listed under Category II) were allowed to proceed ahead towards the achievement of their requisite milestones as per the RE Policy 2006. However, despite

having achieved the requisite milestones long ago, SEL Phase-I, being wrongly listed under Cat-III, was unable to proceed further.

The Ministry of Energy despite realizing their mistake didn't rectify it on time and the Tariff expired resulted in failure to achieve Financial Close for SEL Phase-I which was practically not possible before the correct listing of the project under Cat-II by the MoE. This scenario was beyond our control and we once again suffered the consequences without any mistake or failure on our part.

Sighting the expiry of the Tariff approaching without any rectification of change in Category from MoE, the Company decided to file a 'Motion for Leave for Review Petition' with the Authority on 14 November, 2019 for grant of six month's extension in the Tariff validity to achieve Financial Close, the date of which coincided with the Tariff's date of expiry. As mentioned earlier, the success of any Financial Close was depended upon two conditions namely listing of project under Cat-II and a valid Tariff.

The Honorable Authority, in its decision on March 27, 2020 regarding SEL review petition for extension in tariff to the project stated in para 11 that the petitioner may consider filing a new Revised Tariff Petition with NEPRA and hence no extension was granted in the Tariff as requested.

The Authority viewed such an extension will not be appropriate as it will be in conflict with the decision of CCoE which inadvertently put the project under Cat-III and that it cannot take decisions contrary to the decisions taken by the CCoE. The Authority further opined that Extension of FC time would be tantamount to granting tariff to SEL based on the equipment prices of 2018 which was not prudent considering the prevailing prices which were reduced significantly as compared to the prices prevalent at the time of tariff determination. Therefore, Projects being developed lately should be on the reduced prices of equipment prevalent at that point of time.

We are of the view that Authority's decision was unjust in viewing our project as the one having unable to achieve financial close within one year and need to file a new tariff application without considering the fact that the expiry was deliberately not due to any failure on our part but due to the error in the notification from MoE dated 4 April, 2019, subsequent to the meeting of CCoE, listing the projects approved under three categories. Therefore, tariff's validity did not lapsed in a usual fashion rather the circumstances beyond our control lead to the unwanted situation. The onus of failure lies upon the MoE and AEDB for their negligence while we have been made to suffer unreasonably.

We again submitted a Revised Tariff Petition on cost plus basis before the Authority on 25<sup>th</sup> June 2020 (the "Revised Tariff Petition") which was admitted for further processing. In accordance with due process under the applicable laws, a Notice of Admission/Public Hearing (the "Notice of Hearing") was published by NEPRA in newspapers on the Authority's website and individual notices were issued to the parties, containing salient features of the Revised Tariff Petition, the hearing schedule and the issues framed for the hearing. Through which NEPRA invited comments and intervention requests from interested parties. The online zoom hearing on the subject matter was held on 17<sup>th</sup> March 2021 (the "Reference Tariff Hearing") attended by a large number of participants and key stakeholders. Subsequently, the Authority after having another meeting with the company representative, on 04<sup>th</sup> October, 2021, announced the Tariff Determination (the "Impugned Order") for the project on 29<sup>th</sup> November, 2021 which was published on NEPRA website and received by the Company.

Now, through this Revised Tariff Petition, we request that the aforementioned Impugned Order be cancelled and the Tariff should be revised upwards, *inter alia*, on the grounds provided hereunder.

## C. Grounds of Petition

Pursuant to the relevant provisions of the NEPRA Rules, read with the provisions of the NEPRA Act and the Rules & Regulations made thereunder and with reference to the NEPRA's Revised Tariff Determination dated November 29, 2021 SEL hereby submits the following for consideration of the Authority:

- Revision in EPC Contract Price.
- Addition of costs which the Authority avoided to include in the Project Cost approved in the Revised Tariff Determination dated November 29, 2021.
- Project Development Cost due to project's timeline which has already stretched beyond seven years due to various factors beyond our control resulted in additional costs to the project.
- Costs which are expected to be incurred further due to resubmission of this tariff petition and extended development time (assuming six months to get the new tariff and 12 months afterwards to achieve Financial Close plus another 10 months before COD making a time extension of approximately 28 months in total after filing the tariff application).

## D. Issues for Authority's Consideration

SEL request the Authority to consider the following facts:

### 1. EPC Contract Price

The whole process from submission of the petition and its approval took 17 months which hurt our efforts as the prices of the equipment went high and the EPC Cost given to the project is not enough to complete it.

The EPC raised up as the interest rate gone upside globally as well as the high inflation in most of the countries gone towards double digits which compelled the manufacturers to revised their costs on higher side.

Also, the global proliferation of Corona Pandemic in early 2020 ceased almost the activities all over the world, including the industrial and economical one. This resulted in

- Stoppage of manufacturing new Solar Plants. Also, as the entire world is moving towards clean/green energy, the demand of Solar Panels are increasing day by day. China itself is shutting down its coal power generation plants and focusing to go for clean solar energy. This resulted a lot of pressure in manufacturing of Solar Panels and auxiliary equipment used in the plant and accordingly the prices increased between 30 to 40% in last two years because of high level demand globally.
- Disruption in world supply chain and per container shipment charges have gone drastically up by tens of folds.

The delay in the tariff determination by the authority has made problems for the project. Also, our requested EPC cost was cut down in tariff determination. Therefore, Since November 2021, we have been requesting and pursuing our EPC Contractor to provide us the turnkey binding price for



the project matching to the cost allowed in tariff determination which was declined time & again and sent their revised proposal for consideration and acceptance by the company to proceed further on the project. We also contacted other EPC parties to offer us the binding price for the project at the level given in the tariff determination but have been informed that with this EPC price project is not possible even at no profit no loss basis. Furthermore, now the 500kw modules are not available in the market.

With the latest technology and underlying civil, electrical, and engineering works, the EPC costs are understandably going to rise significantly. Consequently, underlying cost elements for onshore and offshore contracts for EPC as well as development costs and expenses under O&M will increase significantly which will impact the Tariff determination.

In addition to that the new technology will remarkably increase the Capacity Utilization factor to **22.96%** from previously determined rate of **23.20%** with an energy generation of **207018 MW** per annum as compared to **20232 MW** and a degradation factor of just **0.8%** annually as against **0.5%** determined previously. This will be a remarkable 'yield' for any solar project in Pakistan so far. The Simulation Report is attached at **Annexure 07** for Authority's reference.

The proposed revised cost for the Project is summarized below for Authority's consideration:

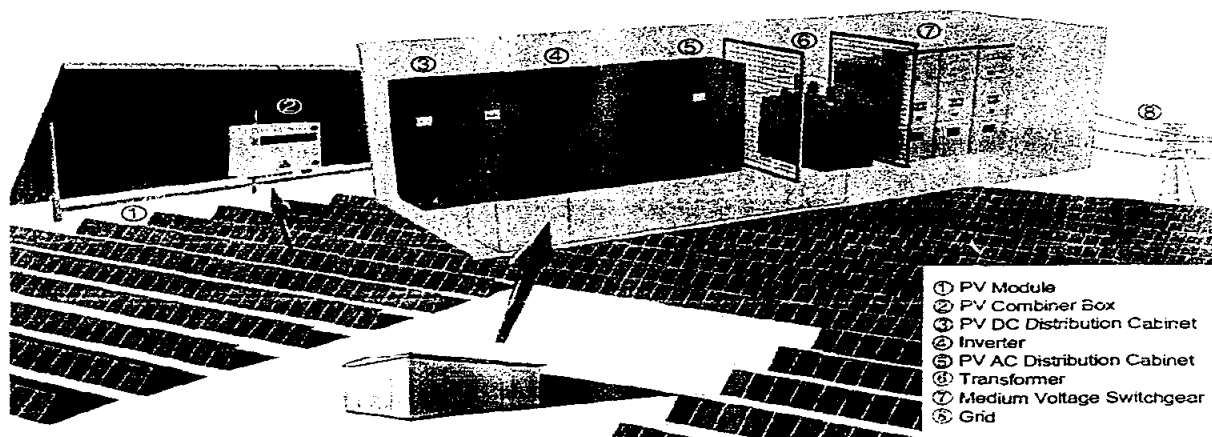
Description	Amounts in Million USD	
	Allowed in Previous Tariff Determination (29-11-2021)	Proposed Cost (Applied)
EPC Cost	57.440	73.000
Project Development Cost	01.668	01.366
Land & Land Development	00.000	03.729
Project Implementation Cost (incl. capitalized degrad. 0.5% p.a)	02.079	03.943
Insurance During Construction	00.230	00.292
Finance Cost	00.663	01.742
Interest During Construction	01.077	03.028
<b>Total</b>	<b>63.157</b>	<b>87.099</b>

## 2. Change in Design and new Technology

The design is revised due to change in size and technology of modules and inverters. The proposed technology used is bifacial mono PERC Technology. According to the common design and documents provided, we propose 181888 pieces of 550Wp modules, for a total installed capacity of 100MWp. The power will be generated block by block, each with a capacity about of 1.10MWp, and combined to the grid concentrated. There is an all-in-one PC (set-up transformer, inverter and ring network cabinet) in each 1.1MWp block. The PV modules are connected in series to form array strings, which then connect to the DC current combination boxes. The inverters convert the DC power from the PV modules into 3-phase AC power, and the AC power outputs of inverters are then aggregated into a step-up transformer, in order to step up the 3-phase AC low-Voltage (LV) to 33 kV level at Medium Voltage (MV). The generated power is then transmitted to a newly built 132kV substation via 33kV connecting cables, and then stepped up to 132kV through two

132/33kV main transformers. The generated power is then transmitted to a newly built 132/33kV substation via 33kV connecting cables, and then stepped up to 132kV through two 132/33kV main transformers. Finally, the generated power of the PV farm is transmitted to two 132kV overhead lines deliver the output power to the local grid.

Due to the improved technologies, the CUF rate is expected to be **22.96%** at COD with annual degradation factor of **0.8%**.



### 3. Proposed EPC Cost due to Advanced Technology

In the Impugned Order NEPRA allowed EPC cost at **USD 57.44 M** whereas, on the basis of new technology and equipment, we propose EPC cost at **USD 73.00 M** as discussed below which is quite reasonable keeping in view the the increased competition in the solar energy market internationally.

Breakup of proposed EPC cost is provided hereunder:

EPC Cost	US \$ (Million)	US \$ / MW
Modules	27.916	0.279
Inverters	4.557	0.046
Mounting Structure	11.465	0.115
Balance of Plant (Civil Works, Cables, Transformers etc.)	29.063	0.291
<b>Total EPC Cost</b>	<b>73.000</b>	<b>0.730</b>

#### 3.1 Modules

On the basis of EPC Cost ascertained by NEPRA the assumed cost of modules was **USD 21.966 M** or **USD 0.220/MW** whereas the cost of new modules and related equipment is proposed to be **USD 27.916 M** or **USD 0.279/MW** as per prevailing market dynamics being more advanced and efficient than the earlier modules.

Zhenfa had selected PV Module 435 Wp Si-Mono modules having conversion efficiency of 19.6% at STC whereas our PV modules have not only higher STC rated output of 550Wp but also have better conversion efficiency of 21.3%. Moreover, we have 100% tracking System in comparison of 30% of Zhenfa Solar.

SEL has selected Tier-1 PV Module “550 watt Bifacial Mono PERC Module” for its 100MW Solar Power Plant. It is considered as the state of the art in the Photovoltaic technology with the IEC 61215, IEC 61730, UL 61215, UL 61730 and IEC TS 62941 certification. It has 144 number of cells (maximum number by any solar project so far) and 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 cell improve the efficiency of modules , offers a better aesthetic appearance, making it perfect for Grid Connected Systems. In addition it has higher module conversion efficiency (up to 21.3%) benefit from Passivized Emitter Rear Contact (PERC) technology. Furthermore, The PV 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.

The project mainly selects PV modules, and the PV modules are connected in series to form array strings. PV modules have advantages of high battery conversion efficiency, good stability, small size for equal capacity, etc. The PV modules with STC rated output (Pmpp) 550Wp are suggested for the project.

### 3.2 Inverter

The Company Previously submitted SG2500 HV type Inverters having system voltage of 1500 V which Zhenfa solar has selected in there tariff. The cost of these inverters is assumed at **USD 4 M** by Zhenfa in its Tariff application.

Siachen has advanced technology SG1100UD type Inverters and accordingly the cost is assumed at **USD 4.557 M**. Our inverters are 8.8MW with advanced three level technology and maximum inverter efficiency of 98.8%.

The new inverters have 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.

An all-in-one PC including two 4400kW inverters with 8.800kW capacity is selected. By adopting variable structure PWM modulation algorithms and advanced MPPT control algorithms, the system loss can be reduced to the greatest extent, making the whole system efficiency highest, up to the maximum of 99.02%. At the same time, the inverter uses digital DSP control chips and dual power supply, increasing the reliability of the system. The inverter should have passed the TUV certification.

### 3.3 Mounting Structure

The mounting structure for the modules and inverters comprise of mounting foundation for the modules, the civil works and installation works for inverters, substations, boundary walls, and fencing around the facility along with construction of building structures for labour and staff accommodation, control room, testing and equipment maintenance facilities, drainage

systems, and roads. We assumed to incur a cost of **USD 11.465 M** for these accounts. Zhenfa has assumed **USD 10.8 M** on this account.

### 3.4 Balance of Plant (Civil Works, Cables, Transformer etc.)

These costs comprise of mainly the electrical and civil works connected with erection of foundations for transformers, costs and installation of transformers, cables etc. We have estimated these costs to be **USD 29.063 M** which is higher than Zhenfa's estimates of **USD 22.440 M** due to more advanced technology equipment, number of transformers, SCADA systems for monitoring and control, built in CCTV and fire alarm systems, water supply and drainage systems, testing and meteorological equipment and software, electrical fittings at the buildings, ventilation and air-conditioning systems, and the quantity of electrical cables required for the interconnections.

## 4. Non-EPC and Project Development Cost

The Authority allowed **USD 1.668 M** as project development cost in Impugned Order, however cost incurred till date has already exceeded that figure and amounted to **USD 3.230 M** as at **30-June-2022** which will further increase to **USD 3.301 M** until the start of commercial operation as it would take another 28 months from the date of filing the tariff application (6 months to get tariff determination, 12 months to achieve financial close and further 10 months for physical implementation of the project as standard practice) to achieve project start-up. The costs are assumed to be incurred on account of following heads for project development:

- Staff Salaries & Project Administration Costs;
- Travelling;
- Technical studies;
- Renewal of licenses & permits;
- Legal and consultancy;
- Rent, rates, & taxes; and
- Site security & infrastructure development etc.

The detailed breakup of the project development cost incurred to date and further expected to be incurred compared with cost allowed in Determination is provided hereunder.

Cost	Amounts in Million USD		
	Proposed Cost (Applied Now)		
	Upto 30-06-22	Further Until COD	Total Cost
Travelling & Conveyance	0.368	0.001	0.369
Technical Studies	0.839	-	0.839
Legal, Professional & Consultancies	0.051	0.001	0.052
Licenses, Permits & Renewals	0.074	0.032	0.106
Site Development, Security & Infrastructure	0.623	0.012	0.635
<b>Total Project Development Cost</b>	<b>1.955</b>	<b>0.046</b>	<b>2.001</b>

The Authority is requested to consider the additional development costs considering the challenges we have been facing to keep the project viable and sustain despite all the adversaries,

the delays in decisions from the regulatory agencies, inflationary pressures and the increasing exchange rate.

Paragraphs below explain the reasons for increase in project development cost, provided in above table, for each of the above sub-head for Authority's consideration.

Zhenfa has proposed **USD 1.902 M** as development cost in its application while we now propose **USD 2.001 M** due to the fact that we our company was established in June 2015 and we have been working on the project development for a longer time period. In addition to that, our project has faced many setbacks such as expiry of the tariff determination, travelling expenses on account of frequent visits to Islamabad by our Chief Executive and Engineers, and additional payments to the bank against Guarantee deposit with SAEDB for LOI extensions from time to time due to exchange rate increases. These factors along with provisions for staff salaries and utilities have passed the budgeted costs due to delays and over stretched timelines which were not expected for the project.

#### **4.1 Administration Cost**

Initially the cost elements were estimated based on assumption that the financial close will be achieved within one year of Tariff Determination i.e. before 18 November 2019. Due to extended period of project, preparation of resubmission of tariff application, obtaining of different permits/ studies and human resource cost, the above cost comprising of project staff salaries, office rent, and site security has been increased by as at 30-June-2022 and further cost expected to be incurred until the new tariff determination date which is expected to take another six months' time. Further, given that the new tariff is approved in six months from the date of filing, the time to achieve financial close will be twelve months from the date of new tariff determination. Therefore, the administration costs will further increase until financial close.

##### **4.1.1 Travelling Cost**

This head covers costs related to travelling, accommodation, daily allowances and other allied expenses incurred for development, arrangement of financing & EPC and for progress/ monitoring meetings etc. during development and construction period of the Project. This cost has been increased due to extended period, frequent visits to Islamabad in connection with the project and hearings at NEPRA on its motion for review. These costs are further expected to escalate due to duplication of efforts for resubmission of tariff petition application.

#### **4.2 Technical Studies & Consultancy Costs**

The Pre-Financial Close studies and project consultancy services costs were estimated at **USD 0.587 M** in the initial Tariff Determination by the Authority. However, due to delays and failure to achieve financial close within the stipulated time, these costs have significantly increased. Based on the requirements of technical consultants, due to delays in the Project, additional costs already been incurred due to the following:

- Payments to Sindh Environmental Protection Agency against extension in validity of environmental approval (IEE) and professional fee paid to consultants for preparing the environmental reports; and

- Exchange rate difference paid to the Banks against LOI Guarantee deposited with SAE

In addition to above, the costs are expected to be further incurred until Financial close on account of review petitions for NEPRA's consideration of tariff extension applied now; updating of interconnection, financial model revisions and consultants' fee for their professional services in drafting of the new tariff petition.

### 4.3 Regulatory Permits, Permissions and Related Costs

SEL has already paid annual generation license renewal fee until 2020 and a further fee for two (2) more years to be paid until 2022. Accordingly cost under this head increased to **USD 0.074 M**. In addition, a provision of **USD 0.032 M** has been made to account for the expenses to be incurred on annual generation license fee for further three years; renewal of LOI with SAEDB; fee payable to SECP for increase in share capital and Stamp duty on registration of shares; Legal advisors' fee; and payment to various other agencies in connection with projects' activities as required under the applicable laws till start of Commercial Operations.

### 4.4 Site development, Security and Infrastructure

SEL is a privately funded project and incurred costs in acquiring land then further incurred costs on land development and infrastructure which amounted to **USD 0.623 M** until June 2022. In order to maintain the premises, an additional cost on security of the assets is required as well. Taking all these costs into account, the project is estimated to incur further **USD 0.012 M** by the time of financial close thus total costs estimated to be **USD 0.635 M**.

## 5. Land Cost

Earlier in the Tariff Determination dated 29-Nov-2021, the Authority included the value of project's land in O&M Cost and allowed **USD 0.900 M** in total for theses which was unjustified and not realistic and land cost should be separated from O&M Costs. The Authority did not considered the value for a land measuring 587.08 Acres in prime location in District Thatta. This rate was even much less than the prevailing rental rates in that area. The Authority is requested to determine the value of land fairly considering the following facts:

- The Authority, in its Decision No. NEPRA/TRF-403/GSPL-2017/1190-1192 dated January 25, 2018 with respect to M/s. Gharo Solar (Pvt.) Limited's Tariff Petition, determined the land at USD 23,810/MW or USD 1.190 M which is a leasehold land located in the same area. Our land is a freehold, more valuable, and located at much more suitable location which is not on a low elevation or tidal/marshy land.
- We have been keeping this land for approximately 6 years with intention to erect a solar power project and the time stretch has cost us heavily in terms of opportunity cost. We have already incurred expenditure on land development to the tune of **USD 0.540 M** expecting that the project will be operational in 2020. However, the constant delays in project's approvals by the concerned authorities has overstretched the initial time estimates for the project.
- Furthermore, the rate for lease of land by Sindh Government currently stands at PKR 288,000 per acre. Adding the land transfer, commercialization and other land registration expenses, to be paid separately per acre cost of land arises to around 500,000/-. The market prices in the Mirpur Sakro area are Rs. 1,200,000/- per acre. SEL took the cost of land acquisition on

Government of Sindh rates in the Total Project Cost submitted to NEPRA. Also, around Rs. 150,000/- per acre is estimated to be incurred on SBICA Approval and Transfer of Land by the Board of Revenue, Sindh.

NEPRA did not allowed a penny under this head in the Total Project despite allowing the same in other Solar Power projects. So, we insist that, in order to keep the Total Project Cost more realistic in comparison to the similar solar power projects this cost should be added.

## 6. Debt Financing Cost

In the previous tariff determination, the rate of 3-Months LIBOR was determined by the Authority at 0.14575% whereas the prevailing 3-Month LIBOR rate, as taken by SEL, is **5.13314 %**. This is sharply increased due to the outbreak of corona pandemic. The rate is further expected to increase in the forthcoming few months.

The economic Spread on the finance obtained from China was previously determined at 3.5% along with Sinosure of 0.6% which is now changed. The indicative term sheet from the project financiers Industrial & Commercial Bank of China (the ICBC) have offered an interest rate of 6-M LIBOR plus 4% spread. The financial cost taken in this petition has been calculated on above assumptions.

## 7. O&M Costs

With project being over stretched beyond initial estimates, the overall cost of O&M has passed the cost allowed to the project under previous tariff determination and stands currently at **USD 1.275 M**. The cost is further expected to increase by **USD 0.025 to close at USD 1.300 M at COD** which will take 10 months from the date of FC as a standard practice (cost includes provisions for 28 months from the tariff filing date-assuming 6 months to tariff determination+12 months to FC+10 months to complete construction and start COD). The O&M cost post COD over the life of the project will be **USD 13,0000/MW as per the O&M Contract**.

## 8. Construction Period

Already allowed ten months from Financial Close. The Authority is requested to allow the same.

## 9. Banks/DFIs

The Lenders not agreed to finance this project based on the discrimination made in SEL Tariff Determination in comparison to other Category II projects. They are signifying that this project is not bankable due to following points:

Head	Other Category-II Solar Power Projects (Zorlu, Zhenfa, Meridian, HNDS, Helios)	Siachen Energy Limited
RoE and RoEDC	14%	12% (only RoE) No ROEDC
Indexation of RoE	Quarterly	Annually
Pre COD sale of electricity	Allowed invoicing to CPPA	Invoicing not allowed, means it will be free energy
Sharing Mechanism	Free energy 0.08% above than capacity factor 20% of tariff for 0.75 % above previous slab 40% of tariff for 0.75 % above the previous slab 60% of tariff for 0.75 % above the previous slab 70% thereafter	Free energy 0.30% above than capacity factor 10% of tariff for 0.75 % above previous slab 20% of tariff for 0.75 % above the previous slab 30% of tariff for 0.75 % above the previous slab 40% thereafter

Claw back Mechanism for O&M and RoE	No such provision	<p>It is to be noted that approved ROE amount shall be the maximum limit of the annual equity return to be earned by the project company. The amount of ROE of any year, if exceeds by the given limit, shall be shared between the power producer and consumers through claw back formula to be decided by the Authority under the relevant framework.</p> <p>The Authority may consider making changes in the approved O&amp;M cost while capping the allowed prevailing level, which shall be governed under NEPRA.</p>
Other	No provision for Workers Welfare Fund & Workers Profit Participation payment has been made in the tariff. In case, the company has to pay any such fund, that will be treated as pass through item in the EPA.	This is removed from tariff determination and will directly hit RoE to reduce further from 12%.

## 10. Other Factors

- The prevailing political un-stability took the country at the verge of financial collapse and all the Banks/DFIs are not willing to finance the project.
- Interest rates are again moving upwards globally.
- This time taking process of tariff determination has created another difficulty. The 500W modules approved in the tariff determination are no longer available for the project as manufacturers are making 545W-600W modules.
- Labour cost has gone high as well.
- We have been at the disposal of NTDC for the approval of grid code the matter was considered as settled as the project was already in NTDC expansion plan for the year 2021 as mentioned in the tariff determination by NEPRA. The Company was in the Category-II list of MoE and was eligible for the evacuation certificate. However, even after constant contact through letters and phone calls the evacuation certificate is still pending.
- Also, 12 month time period allowed for financial close has been are lapsed but we are still unable to get Power Evacuation Certificate and Grid Interconnection Study Approval from NTDC, required to be submitted TO AEDB for issuance of Tripartite Letter of Support to project.
- Furthermore, almost seven years lapsed since the project initial start, due to various factors beyond our control, we have not been able to move towards financial close and thereafter physical implementation of the project.



On the basis of foregoing facts, which cannot be set aside, related underlying civil, electrical, and engineering works, the EPC costs are understandably going to rise significantly. Consequently, underlying cost elements for onshore and offshore contracts for EPC as well as development costs and expenses under O&M will increase significantly which will impact the Tariff determination.

Also, the rising international competition in the solar energy market and the ongoing trend in LIBOR rates will add to increase in the costs and bring the Tariff to **US cents 5.1119 per kWh** as against the previously determined tariff of US cents 3.2352/ kWh.

As mentioned above, it is requested that the Authority may consider this Petition as a continuation of the earlier Determination/ Review Motion decision, and allow the assumptions already allowed in its earlier Determination (except the economic assumptions and indices i.e. LIBOR, Exchange rate, Pak CPI and US CPI). The tariff assumptions already allowed by the Authority are reproduced in the below table for ease of reference and the Authority is requested to allow the same.

<b>Description</b>	<b>Already Allowed in Previous Decision</b>	<b>Assumptions for this Petition</b>
<b>Insurance During Construction</b>	0.4% of the approved EPC Cost	0.4% of the approved EPC Cost
<b>Capitalized Degradation and degradation factor</b>	USD 2.079 M (3.62% of EPC cost)	Included in EPC cost of USD 73.000 M (3.62% of EPC cost)
<b>Tariff Period</b>	25 Years	25 Years
<b>Debt Equity Ration</b>	80:20	80:20
<b>Insurance during operation</b>	0.4%	0.4%
<b>Loan Repayment Period</b>	14 Years	14 Years
<b>Total value of debt @ 80% of total project value</b>	USD 50.525 M	USD 69.679 M
<b>Base Rate</b>	0.14575% (3 months LIBOR)	5.13314% (3 months LIBOR )
<b>Spread</b>	4.25%	4.25%
<b>Repayment Period</b>	14	14
<b>Grace Period</b>	Up to 12 Months	Up to 12 Months
<b>Discount Rate of Levelization</b>	10%	10%
<b>Return on Equity</b>	13.09%	12.41%
<b>True Up Conditions</b>	Same as per the earlier Determination <i>except for the change in exchange rate.</i>	
<b>Indexation</b>	US CPI and Pak CPI to be established by Authority	

## E. Summary of Reference Generation Tariff

A summarized Reference Generation Tariff table setting out the two bands is provided below. An exchange rate of **USD 1 = 278.79 PKR** has been used:

Years	1 – 14 (PKR / kWh)	15 – 25 (PKR / kWh)
O&M – Foreign	1.2138	1.2138
Insurance	0.3930	0.3930
ROE	2.8132	2.8132
Debt Servicing	12.1016	0.0000
Total	16.5215	4.4199

Levelized 25 years - PKR / kWh	14.2412
USD / kWh	5.1119

Year	O&M - Foreign	Insurance	Return on Equity - After COD Rs. / kWh	Debt servicing	Tariff per Kwh.	
1	1.2138	0.3930	2.8131	12.1016	16.5215	5.9304
2	1.2138	0.3930	2.8131	12.1016	16.5215	5.9304
3	1.2138	0.3930	2.8131	12.1016	16.5215	5.9304
4	1.2138	0.3930	2.8131	12.1016	16.5215	5.9304
5	1.2138	0.3930	2.8131	12.1016	16.5215	5.9304
6	1.2138	0.3930	2.8131	12.1016	16.5215	5.9304
7	1.2138	0.3930	2.8131	12.1016	16.5215	5.9304
8	1.2138	0.3930	2.8131	12.1016	16.5215	5.9304
9	1.2138	0.3930	2.8131	12.1016	16.5215	5.9304
10	1.2138	0.3930	2.8131	12.1016	16.5215	5.9304
11	1.2138	0.3930	2.8131	12.1016	16.5215	5.9304
12	1.2138	0.3930	2.8131	12.1016	16.5215	5.9304
13	1.2138	0.3930	2.8131	12.1016	16.5215	5.9304
14	1.2138	0.3930	2.8131	12.1016	16.5215	5.9304
15	1.2138	0.3930	2.8131	-	4.4199	1.5865
16	1.2138	0.3930	2.8131	-	4.4199	1.5865
17	1.2138	0.3930	2.8131	-	4.4199	1.5865
18	1.2138	0.3930	2.8131	-	4.4199	1.5865
19	1.2138	0.3930	2.8131	-	4.4199	1.5865
20	1.2138	0.3930	2.8131	-	4.4199	1.5865
21	1.2138	0.3930	2.8131	-	4.4199	1.5865
22	1.2138	0.3930	2.8131	-	4.4199	1.5865
23	1.2138	0.3930	2.8131	-	4.4199	1.5865
24	1.2138	0.3930	2.8131	-	4.4199	1.5865
25	1.2138	0.3930	2.8131	-	4.4199	1.5865
Levelized	1.2138	0.3930	2.8131	14.5086	14.2412	5.1119

## Prayer

In light of the foregoing, it is respectfully prayed that the Impugned Tariff Determination may be cancelled.

Authority is further requested to maintain original decision (as per the Determination/Review Motion decision) with regard to debt equity structure, return on equity, other costs and all indexations, escalations, adjustments and sharing mechanism. Any other relief that the Petitioner may be entitled to, be also allowed to the Project in the interest of justice.

Authority is also requested to determine a new reference tariff table on the basis of the facts and assumptions as discussed and summarized above in detail in the Petition.

Further any taxes, stamp duties, feed and levies (sales tax of non-refundable nature) etc. of federal, provincial, local or district governments, which are not factored in the tariff calculation are requested to be allowed as pass through.

Authority is kindly requested to process the Revised Tariff Application at the earliest thereby enabling us to proceed further with the development process.

Respectfully submitted on behalf of the Petitioner.



**Siachen Energy Limited**

Dated : 15-Mar-2023

# COPY OF SIACHEN ENERGY LIMITED'S BOARD RESOLUTION



ENERGY FOR A BETTER TOMORROW


## SIACHEN ENERGY LIMITED

**Extracts of the Resolution**  
**Passed by the Board of Directors of Siachen Energy Limited**  
**In its meeting held on 13<sup>th</sup> of July 2022**

### Resolution:

1. **RESOLVED THAT**, "the Board of Directors of Siachen Energy Limited ("Siachen") hereby approved to file the tariff petition with National Electric Power Regulatory Authority ("NEPRA" or the "Authority") in respect of 100 MW Solar Power Plant to be located at Mirpur Sakro, District Thatta, Sindh (the "Project") and in relation thereto enter into and execute any and all required documents, make all filings, do any act and pay all applicable fees, whatever it may be in each case, of any nature whatsoever as may be required."
2. **FURTHER RESOLVED THAT**, "in respect of tariff petition and applications etc. to be submitted to NEPRA, Mr. Muhammad Kashif Shamsi, is the duly authorized representative on behalf of the Company for the purpose of filing the tariff petition and is hereby empowered and authorized for and on behalf of the Company to:
  - a. Review, execute, submit and deliver the tariff petition or applications (including modifications thereto) and related documentation required by NEPRA, inter alia, any consents, contract, document, power of attorney, affidavits, statements, letters, forms, applications, deeds, undertakings, approvals, memoranda, amendments, communications, notices, certificates, request and any other instruments of any nature whatsoever;
  - b. Sign and execute necessary documentation, pay necessary fees, appear before NEPRA as needed and do all necessary things for the issuance of tariff for the Project;
  - c. Represent and respond on behalf of the Company, in the public hearings, to all of NEPRA's queries, case officers, stakeholders and to attend pre and post hearing meetings;
  - d. Do all such acts, matters and things as may be necessary for carrying out the purposes aforesaid and give full effect to the above-said; and
  - e. Delegate all or any of the above powers in respect of the foregoing to any other officials of the Company as deemed appropriate.

**CERTIFIED TO BE TRUE COPY**

  
 Dated, July 14, 2022  
