



SIACHEN ENERGY LIMITED

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

Subject: Submission of the Tariff Petition of 100 MWp Solar Power Project by
Siachen Energy Limited – Phase – I (SEL)

Dear Sir,

We herewith submit the Company's Tariff Petition along with the fees as determined by the National Electric Power Regulatory Authority ("NEPRA" or the Authority) for kind consideration and favorable 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.

The Tariff Petition (including its Annexures) is submitted in triplicate herewith:

- HBL Bank Draft No. 13841828 dated 25 June 2020, amounting to PKR 1,117,440/- (Pakistan Rupees ONE MILLION ONE HUNDRED AND SEVENTEEN THOUSAND FOUR HUNDRED AND FORTY ONLY) as requisite filing fee for Tariff Petition.
- Board Resolution of Siachen Energy Limited.
- Affidavit of Mr. Muhammad Sohail Shamsi.

Yours Sincerely,

Muhammad Sohail Shamsi
Chief Executive Officer
Siachen Energy Limited

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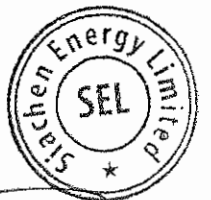
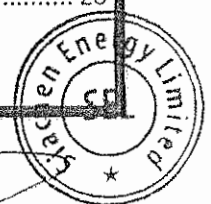


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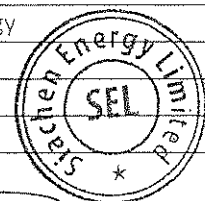


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List of Acronyms

AC	Alternating Current
AEDB	Alternative Energy Development Board, Islamabad
BOO	Build, Own and Operate
BoP	Balance of Plant
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
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
HESCO	Hyderabad Electric Supply Corporation
IA	Implementation Agreement
ICBC	Industrial & Commercial Bank of China Limited
IEE	Initial Environmental Examination
Km	Kilometers
kWh	Kilowatt Hours
LIBOR	6-Month London Interbank Offered Rate
LOI	Letter of Intent
LOS	Letter of Support
M	Million
MoE	Ministry of Energy, Government of Pakistan
MV	Medium Voltage
MWh	Megawatt Hours
MW _p	Megawatts
NEPRA	National Electric Power Regulatory Authority
NTDC	National Transmission and Despatch Company Limited
SAEDB	Sindh Alternative Energy Development Board, Government of Sindh
SCADA	Supervisory Control and Data Acquisition
SECP	Securities & Exchange Commission of Pakistan
SEL	Siachen Energy Limited (100MW _p Solar Power Project Phase-I)
SEPA	Sindh Environmental Protection Agency
PKR	Pakistan Rupees
PPDB	Punjab Power Development Board
PPIB	Private Power & Infrastructure Board, Ministry of Energy
PR	Performance Ratio
PV	Photovoltaic
US\$	United States Dollars



Project Chronology

Event	Date
Incorporation Certificate, SECP	June 01, 2015
Letter of Intent (LOI), Government of Sindh	August 28, 2015
1st Application for Upfront Tariff Determination	December 07, 2015
Grid Interconnection Study Submission	December 12, 2015
Environmental approval	January 13, 2016
Approval of Grid Interconnection Study, NTDC	May 26, 2017
2nd Application for Upfront Tariff Determination	June 06, 2017
Application for Generation License	June 21, 2017
NTDC Power Evacuation Certificate	July 25, 2017
Issuance of Generation License	October 10, 2017
3rd Application for Tariff Determination	January 30, 2018
Admission of Tariff Petition for consideration by NEPRA	March 27, 2018
Hearing of Tariff Petition by NEPRA	April 19, 2018
Tariff Determination by NEPRA	November 19, 2018
CCoE Meeting held	February 27, 2019
Notification from Ministry of Energy (Power Division) 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)	29 March 2019; April 4, 2019
Meeting of AEDB	September 12, 2019
Review Petition filed with NEPRA by Siachen for Tariff Extension after it expired on 18 Nov 2019	14 November 2019
49 th Board Meeting of AEDB	15 January 2020
Minutes of the 49 th Board Meeting of AEDB issued by Ministry of Energy (Power Division)	3 February 2020
NEPRA Decision on Review Motion filed by Siachen for Tariff Extension	27 March 2020
CCoE Meeting and Approval of project under Cat-II	4 May 2020
New Tariff Application Filed with NEPRA by Siachen	25 June , 2020



PETITIONER'S NAME AND ADDRESS

Siachen Energy Limited (SEL)

MAILING ADDRESS:

Siachen Energy Limited

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Pakistan

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

REPRESENTATIVES OF PETITIONER:

Mr. Muhammad Sohail Shamsi
Chief Executive Officer
Siachen Energy Limited (SEL)

PROJECT SPONSORS:

- 1) Muhammad Sohail Shamsi
- 2)

PROJECT EPC:

Powerchina International Group Limited
Building 23, Compound 17, Xi Cui Road,
Haidian District, Beijing China



Grounds of Petition

A. Legal Context and Project Background

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).

We are submitting this petition and requesting the levelized tariff at USD cent 4.4632 per kWh whereas Zhenfa had filed a tariff of US\$ cents 4.8461 per kWh which shows that our tariff is lower than Zhenfa despite using advanced technology and higher development and O&M costs. We have been able to determine this tariff on account of better yield (22.6%) and lower degradation factor (0.5%) and a favorable LIBOR rate (6 month USD LIBOR rate 0.3945%) which sharply declined after the economic slowdown due to corona pandemic from 1.90025% reported on January 1, 2020 to 0.39450% as on 22 June 2020. This rate is much lower than 2.39838% which was the interest rate in last tariff determination.

A brief history of Tariff Applications filed earlier

We bring to the Authority's notice that this is the fourth Tariff Application in total that we have filed with NEPRA since the project's initiation. These delays has cost the project incur additional expenditures in terms of development cost as well as O&M expenses as we had to keep the project alive during the course of time.

The First Tariff Application was filed on 7 December 2015 for 'Upfront Tariff Determination' which was rejected by the Authority due to Generation License not issued at that time while another project "Burj Solar" was awarded Tariff without having Generation License. This reflected that the decision was not based on merit.

Second time, a Tariff Application was filed on 6 June 2017 and it 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 who were willing to invest in the project disappointed and moved away.

We understand that we were deliberately distanced from moving forward as we could not influence like others who were big groups/cartels. Anyhow, we didn't lose hope and whole heartedly kept working because we wanted to play our role in the progress of our beloved country.

Third time, after the new 'Cost Plus Tariff' regime was introduced, we file a tariff application on 30 January, 2018. Finally, the application was approved and Tariff Determination was granted this time



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 4 April, 2019 and the Tariff expired on 18 November 2019 as a result. The project faced another setback and all the efforts/progress achieved till date could not bear any fruit 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 for inclusion in Cat-II based on LOI, Generation License and Tariff Determination-all the required milestones for inclusion in Cat-II as prescribed by the Ministry of Energy. As regards SEL Phase-II, it had only received the LOI at that occasion and was supposed to be listed under Cat-III. However, in the cited notification from the MoE dated 4 April, 2019 both SEL Phase-I and SEL Phase-II were listed under Cat-III by mistake.

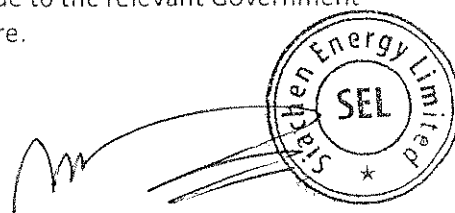
In per paragraph V of the cited CCoE Decision, all projects that have been issued LOIs, granted tariff by NEPRA and issued a generation license (projects listed under Category II) were allowed to proceed ahead towards the achievement of their requisite milestones as per the RE Policy 2006. SEL Phase-I being wrongly listed under Cat-III was unable to proceed further despite having achieved the requisite milestones long ago.

The Ministry of Energy while realizing the mistake didn't rectify it on time and the validity of Tariff expired as a result which effectively lead to failure to achieve Financial Close for SEL Phase-I. The Financial Close was practically not possible until the correct listing of the project under Cat-II by the MoE. This scenario was beyond our control and we were once again deliberately made to suffer 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 grounds of filing such motion for leave were based on grounds summarized hereunder:

- The name of the project SEL Phase-I, despite its eligibility, was not included in the list of projects having tariff and generation license (Cat-II) in the CCoE's decision which was communicated by the Ministry of Energy (Power Division) on 4 April, 2019;
- The wrong classification made it impossible for the project to achieve financial close within the validity of tariff i.e by 18 November 2019 as the correct listing of the project name was fundamental requirement of the project's financiers (IFC);
- The IFC were willing to finance the project provided the name of the project is correctly listed in Cat-II and a valid tariff;
- The mistake in Ministry's notification, though acknowledged by the concerned departments, could not be corrected despite frequent letters, reminders, and appeals at the highest fora;
- Failure to achieve financial close was not the Company's fault but due to the relevant Government authority which resulted in the delays and caused the tariff to expire.

A handwritten signature in black ink is written over a circular stamp. The stamp contains the text "Siachen Energy Limited" around the perimeter and "SEL" in the center, with a small star at the bottom.

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 tariff petition with NEPRA and hence no extension was granted in the Tariff as requested by SEL.

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. The Authority was of the view 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 may not be considered prudent considering the prevailing prices which are 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 it was not expired deliberately 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 that approved projects under three categories. Therefore, the timeline of tariff's validity did not lapse 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 request that the Authority should consider the grave injustices that burdened the project heavily through escalations in timelines and development costs while deciding the current application.

Further, we would have enough time to obtain LOS and achieve the financial close before 18 November 2019 had we been included in the right category in the CCoE's decision of April 4, 2019. Because of above inadvertence, SEL could not achieve financial close and the reference tariff awarded to SEL expired on November 18, 2019.

As per Ministry of Energy (Power Division) Notification dated 4 April, 2019 in the cited CCoE decision paragraph V which the Authority also referred to in its decision of 27 March, 2020 against our Review Motion it is stated that

"...However, if the tariff validity period elapsed, NEPRA will be requested for review of the same to make it consistent with the current market environment and consumer interest. Such review will include appropriate time extension to reach financial closing."

Further, the scope of the review on the Determination is established under paragraph XI that states:

"Projects that are going back for review of tariff will be asked to submit their applications on the basis of latest technology and technology related factors".

Keeping in view the above position SEL hereby re-submits the tariff petition for determination by the Authority:

- In light of the above referred Latest CCoE Decision dated April 04, 2019
- the NEPRA Act,
- Rule 3 of the NEPRA Rules, and
- The decision of Authority against review motion dated 27 March, 2020.



We hereby file a petition with the Authority by submitting it with the Registrar along with such fees as may be determined by the Authority from time to time. A petition "means a petition made to the Authority for the determination, modification or revision of tariff".

B. Basis for Requests of Tariff Determination

Further to the NEPRA's decision on review motion, SEL hereby resubmits petition before NEPRA for determination of tariff, keeping in view the following:

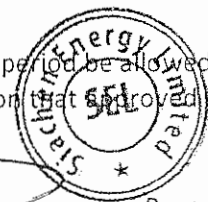
- All project approvals including LOI from SAEDB Government of Sindh along with latest extension, land documents, Environmental study, interconnection study and feasibility study (Annexure-4 to Annexure-10).⁹)
- EPC arrangement for supply, and contracts for construction, erection and commissioning of the Project and O&M contract by Powerchina International Group Limited, and HDEC Engineering (Pvt.) Ltd, China, respectively. (Annexure-12¹² to Annexure-15).¹⁴
- Project debt financing has been arranged (on the basis of earlier debt equity structure approved by NEPRA in the Determination dated 18 November 2018) and lenders have taken their internal approvals, and sponsors have committed the required equity for the Project. Indicative term sheet to finance the project from industrial & Commercial Bank of China ("ICBC") is attached herewith. (Annexure-12).¹¹

C. Submission

Pursuant to the Latest CCoE Decision, the relevant provisions of the NEPRA Rules, read with the provisions of the NEPRA Act and the Rules and Regulations made thereunder SEL hereby submits following for consideration of the Authority:

- Change in Technology, resultant impact on EPC cost and Capacity factor
- Increased Project Development Cost due to project's timeline which has already stretched beyond five years due to delays on part of the Ministry of Energy and the AEDB which lead to expiry of the Tariff which consequently resulted in additional costs to the project. It is to be noted that the project has been recommended for change in category by the CCoE on 4 May 2020 based on summary moved by the MoE in Feb 2020. Accordingly the project has now been correctly listed under Cat-II
- 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).

To be clear, SEL would not be filing this tariff petition, had the Financial Close period be allowed as per Review Petition for Tariff extension with effect from the date of CCoE decision that approved change



of category from Cat-III to Cat-II. This petition therefore only contains information relating to the Project that:

- (a) has been directed by the latest NEPRA's decision dated 27 March 2020 or
- (b) is a consequence of the above mentioned delay faced by SEL

All other information is as contained in the original tariff petition/Review Motion and as determined by NEPRA.

D. Issues for Authority's Consideration

SEL request the Authority to consider the following facts:

D1. Previous Technology

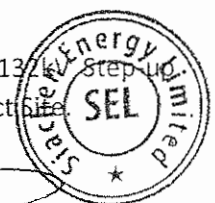
Earlier at the time of last tariff application, the Company selected PV Module "Eagle 1500V-JKM345M-72-V" for the Project. The Photovoltaic technology had IEC 61215, IEC 61730 certifications. Its maximum voltage promoted to 1500V and the module strings were extended by 50% which reduced the overall system BOS. The technology adapted 4 busbar solar cells to improve the efficiency of modules, offered a better aesthetic appearance, making it perfect for grid connected systems. In addition, it had 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.

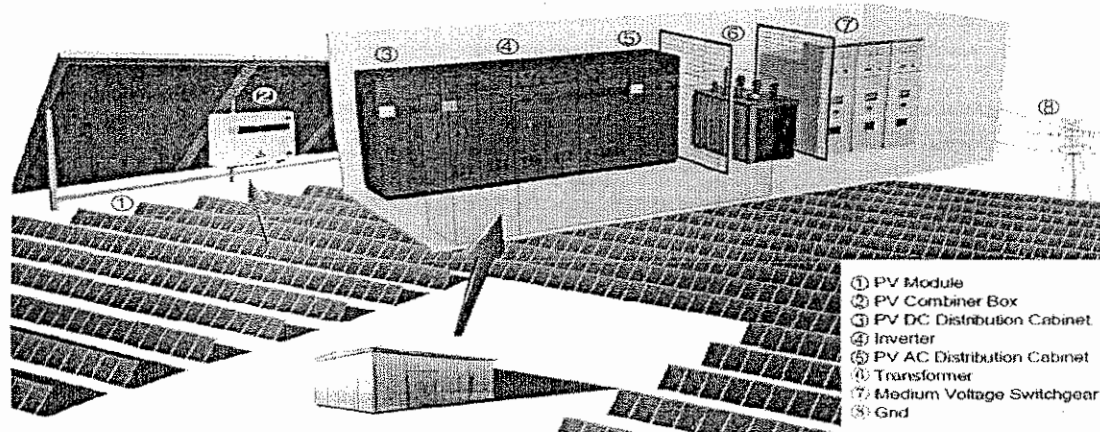
The AC Output from inverters at 550V will be stepped up through internal MV Step-up transformer to 33kV.

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 was estimated at 20.89% at GHI of 1,992 kWh/m²/year and was the maximum achievable plant factor at that time.

D2. 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 200016 pieces of 500Wp modules, for a total installed capacity of 100.008MWp. The power will be generated block by block, each with a capacity about of 7.693MWp, and combined to the grid concentrated. There is an all-in-one PC (set-up transformer, inverter and ring network cabinet) in each 7.693MWp 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 132kV 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.

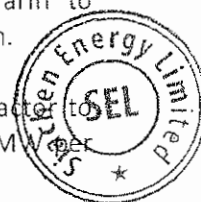
Due to the improved technologies, the CF rate is expected to be **22.96%** at COD with annual degradation factor of 0.5%.

D3. Project Cost, Tariff & Capacity factor

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.

However, the rising international competition in the solar energy market along with the decreasing trend in LIBOR rates will offset the impact of the increase in costs and bring the Tariff to US cents 4.4632 per kWh as against the previously determined tariff of US cents 4.8184/ kWh.

In addition to that the new technology will remarkably increase the Capacity Utilization factor to **22.96%** from previously determined rate of 22.21% with an energy generation of 201130 MW_p per



annum as compared to 182996 MW and a Degradation factor of just 0.5% annually as against 3.62% determined previously. This will be a remarkable 'yield' for any solar project in Pakistan so far. The Assessment Report is attached at Annexure 03 for Authority's reference.

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

Amounts in Million US\$		
Description	Allowed in Previous Tariff Determination (expired)	Proposed Cost (applied)
EPC cost (incl. capitalized degradation 0.5% p.a)	70.350	67.989
Non-EPC/Project Development Cost	1.443	2.931
Land	0.135	2.500
Insurance During Construction	0.352	0.272
Finance cost	1.445	1.496
Interest During Construction	1.301	1.951
Sinosure During Construction	0.147	0.372
Total	75.173	77.511

D3.1. Proposed EPC Cost due to advanced technology

Zhenfa assumed EPC cost at US\$ 65.2 M whereas we have proposed a cost of EPC US\$ 67.989 M due to advanced technology and equipment as discussed below. It is also important to note here that our EPC cost is lesser than the previous EPC cost allowed in the last tariff. This is due to the increased competition in the solar energy market which has brought down overall prices of the related equipment internationally.

Breakup of proposed EPC cost is provided hereunder:

EPC Cost	US \$ (Million)	US \$ / MW
Modules	26.000	0.260
Inverters	4.244	0.042
Mounting Structure	10.678	0.107
Balance of Plant (Civil Works, Cables, Transformers etc.)	27.067	0.271
Total EPC Cost	67.989	0.680

D3.1.1. Modules

SEL had previously assumed the module cost of US\$ 0.28/MW whereas the cost of new modules and related equipment is proposed at US\$ 26.0 M i.e US\$ 0.260/MW which is lower than before due to prevailing market dynamics despite being more advanced and efficient than the earlier modules.

Zhenfa has 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 500Wp but also better

conversion efficiency of 20.4%. Moreover, Siachen Solar is 100% tracking System and Zhenfa solar has 30%.

SEL has selected Tier-1 PV Module "500 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 150 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 20.4%) benefit from Passivated 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 (P_{mpp}) 500Wp are suggested for the project. The main technical parameters are as follows:

D3.1.2. 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 US\$ 4 M by Zhenfa in its Tariff application.

Siachen has advanced technology inverters than Zhenfa and accordingly the cost is assumed at US\$ 4.244 M. Our inverters are 6.25MW 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.

All-in-one PC

An all-in-one PC including two 3125kW inverters with 6250kW 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.

D3.1.3. 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 have



assumed to incur a cost of US\$ 10.678 M on these accounts. Zhenfa has assumed US\$ 10.8 M on this account.

Details on each of the constituting heads of account under this cost element are provided in the Annexure-14 for Authority's consideration. (*Annex-13*)

D.3.1.4. 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 US\$ 27.067 M which is higher than Zhenfa's estimates of US\$ 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.

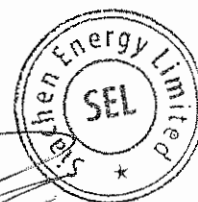
Details on each of the constituting heads of account under this cost element are provided in the Annexure-14 for Authority's consideration. (*Annex-13*)

D.3.2. Non-EPC and Project Development Cost

The Authority allowed US\$ 1.443 M as project development cost in SEL Determination, however cost incurred till date has already exceeded that figure and amounted to **US\$ 2.296 M at 31-Mar-2020** which will further increase to **US\$ 2.931 M** until the time of financial close as it would take another 18 months from the date of filing the tariff application (6 months to get tariff determination and 12 months afterwards to achieve financial close as standard practice) to achieve financial close. The costs are assumed to be incurred on account of following heads for project development:

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

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 rates.



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.

Amounts in Million US\$

Cost	Allowed in Previous Decision (expired)	Proposed Cost (applied)
Administration Cost	0.370	0.500
Consultancy Costs & Technical Studies- Pre-Financial Close	0.587	0.892
Independent Engineer – Pursuant to the EPA	0.03	0.055
Regulatory/legal fees	0.05	0.500
Site development	0.206	0.484
Travelling Costs	0.200	0.500
Others (office equipment/office expenses)	NIL	NIL
Project Development Cost	1.443	2.931

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 US\$ 1.902 M as development cost in its application while we have proposed US\$ 3.045 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.

D.3.2.1. 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 31 March 2020 and a 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.

D.3.2.2. Consultancy Costs & Technical Studies (Owners & Lenders) – Pre-Financial Close

The Pre-Financial Close studies and project consultancy services costs were estimated at USD 0.587 M in the previous 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 amounting have already been incurred under following accounts:

- 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 SAEDB;

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 (filed on 14 November 2019); updating of interconnection, financial model revisions and consultants' fee for their professional services in drafting of the new tariff petition.

D.3.2.3. Regulatory Permits, Permissions and Related Costs

SEL has already paid annual generation license renewal fee for two years till Review Motion decision and a further fee for two (2) more years to be paid until 2021. Accordingly an increased cost of USD 23,244 is added on this account. In addition to that, a provision of US\$ 500,000 has been made to account for the expenses to be incurred on 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 Financial close.

D.3.2.4. Site development, Security and Infrastructure

SEL is a privately funded project and incurred costs in acquiring a piece of land then further incurred costs on land development and infrastructure which amounted to USD 356,477 until June 2019. 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 a further sum of US\$ 25,000 by the time of financial close and thus estimated to be US\$ 0.484 M.

D.3.2.5. 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 by USD 15,000 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.

D.3.3. Land Cost

Earlier in the tariff, the Authority determined the value of project's land at US\$ 0.135 M which was unjustified and not realistic value assumed by the Authority for a land measuring 586 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. Ghara 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 4 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 US\$ 0.471 M expecting that the project will be operational in 2017. 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 while the land commercialization and other land registration expenses have to be paid separately. Accordingly, if we have to lease 586 acres of land from the Government, the cost of leasehold land would be determined at US\$ 1.061 M excluding commercialization and legal expenses.

D.3.4. Debt Financing Cost

In the previous tariff determination, the rate of 3-M LIBOR was determined by the Authority at 2.39838% whereas the prevailing 6 Month LIBOR rate is 0.39450 %. This is sharply declined from 1.90025 % being the rate prevailing on January 2, 2020 before the outbreak of corona pandemic. This decline is due to international efforts and part of financial stimulus by the financial institutions to control the adverse effects of lock downs on the global economy. The rate is further expected to decline until the situation reverses which might take few months.

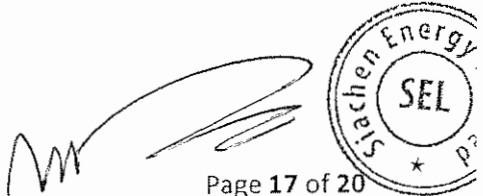
The economic Spread on the finance obtained from China was previously determined at 3.5% along with Sinosure of 0.6% which is now changed. The indicative term sheet from the project financiers Industrial & Commercial Bank of China (the ICBC) have offered an interest rate of 6-M LIBOR plus 4% spread.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

D.4. 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 US\$ 0.191 M. The cost is further expected to increase by US\$ 0.061 to close at US\$ 0.251 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 US\$ 11,000/MW as per the O&M Contract. Therefore, the total O&M cost is determined at US\$ 1.351 M or US\$ 13,515 /MW. For details please refer to Annexure-15/14.

D.5. Construction Period

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



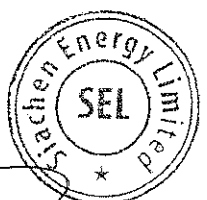
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E. Summary of Reference Generation Tariff

A summarized Reference Generation Tariff table setting out the two bands is provided below.
An exchange rate of US\$ 1 = 167.47 PKR has been used:

Years		1 – 14 (PKR / kWh)	15 – 25 (PKR / kWh)
O&M	Local	0.5627	0.5627
	Foreign	0.5627	0.5627
Sinosure fee		0.0221	0.0000
Insurance		0.2831	0.2831
ROE		1.8071	1.8071
ROEDC		0.2030	0.2030
Debt Servicing		3.6880	0.0000
Total		8.4177	3.4185

Levelized 25 years - PKR / kWh		7.4746
▪ US\$ / kWh		4.4632

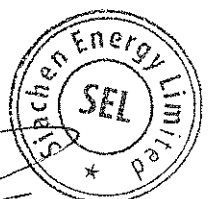


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D.6. Other Assumptions

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.

Description	Already Allowed In Previous Decision	Assumptions for this Petition
Insurance During Construction	0.5% of the approved EPC Cost.	0.5% of the approved EPC Cost.
Capitalized Degradation and degradation factor	US\$ 2.547 M (3.62% of EPC cost)	Included in EPC cost of US\$ 67.989 M (0.5% of EPC cost)
Tariff Period	25 Years	25 Years
Debt Equity Ratio	80:20	80:20
Insurance during operation	0.4%	0.4%
Loan Repayment Period	14 Years	14 Years
Total value of debt @ 80% of total project value	US\$ 60.138 M	US\$ 62.009 M
Base Rate	2.39838% (3 months LIBOR)	0.39450% (6 months LIBOR)
Spread	3.5%	4%
Repayment Period	14	14
Grace Period	Up to 12 Months	Up to 12 Months
Discount Rate of Levelization	10%	10%
Return on Equity	14%	14%
True Up Conditions	Same as per the earlier Determination <i>except for the change in exchange rate.</i>	
Indexation	US CPI and Pak CPI to be established by Authority	



Prayer

In light of the foregoing, it is respectfully prayed that the earlier Tariff Determination and Review Motion decision may be reviewed based on the proposed technology and related factors, current market environment and consumer interest as per paragraph V and XI of the Latest CCoE Decision.

Authority is requested to allow change in design, change in EPC cost and capacity factor because of change in design, increase in project development cost etc. because of the prolonged development period of the Project and debt financing structure.

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 approve a reference tariff table based on assumptions as requested 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 tariff petition at the earliest thereby enabling SEL to proceed further with the development process.

Respectfully submitted on the behalf of Petitioner.


Siachen Energy Limited

Dated: June 25, 2020

