



National Electric Power Regulatory Authority

Islamic Republic of Pakistan

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Web: www.nepra.org.pk, E-mail: registrar@nepra.org.pk

Registrar

No. NEPRA/R/DL/LAG-435/ 2 8698-705

December 27, 2019

Mr. Tariq Ahmad Khan,
Chief Executive Officer,
FAS Energy Power (SMC-Private) Limited,
First Floor, Boquival Tower,
Plot No. 80, Street 27A, Crimson Road, Sector H, DHA, Phase-2,
Islamabad,

**Subject: Grant of Generation Licence No. SPGL/30/2019
Licence Application No. LAG-435
FAS Energy Power (SMC-Private) Limited (FEPSMCPL)**

Reference: FEPSMCPL's application vide letter No. nil dated July 23, 2018 (received on July 26, 2018)

Enclosed please find herewith Determination of the Authority in the matter of Application of "FAS Energy Power (SMC-Private) Limited (FEPSMCPL)" for the Grant of Generation Licence along with Generation Licence No. SPGL/30/2019 annexed to this determination granted by the National Electric Power Regulatory Authority (NEPRA) to FAS Energy Power (SMC-Private) Limited (FEPSMCPL) for its 50.00 MW Solar Power Plant located at Village Badshahabad, Mouza Luni, Tehsil Kulachi, District D.I Khan, in the Province of Khyber Pakhtunkhwa, pursuant to Section 14B of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997/Amendment Act, 2018.

2. Please quote above mentioned Generation Licence No. for future correspondence.

Enclosure: As Above



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27/12/19
(Iftikhar Ali Khan)

Copy to:

1. Secretary, Power Division, Ministry of Energy, A-Block, Pak Secretariat, Islamabad.
2. Managing Director, NTDC, 414-WAPDA House, Lahore.
3. Chief Executive Officer, CPPA-G, ENERCON Building, Sector G-5/2, Islamabad.
4. Chief Executive Officer, Peshawar Electric Supply Company Limited, PESCO House, Shami Road Peshawar.
5. Director General, Environment Protection Department, Government of KPK, 3rd Floor, Old Courts Building, Khyber Road, Peshawar.
6. Secretary, Energy and Power Department, Government of Khyber Pakhtunkhwa, 1st Floor, A-Block, Abdul-Wali Khan Multiplex, Civil Secretariat, Peshawar.

National Electric Power Regulatory Authority
(NEPRA)

Determination of the Authority
in the Matter of Application of FAS Energy Pakistan (SMC-Private) Limited for the Grant of Generation Licence

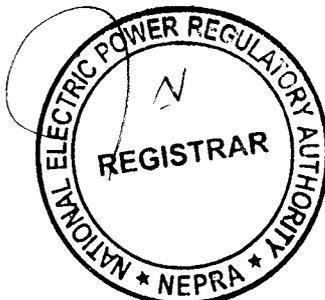
December 27, 2019
Case No. LAG-435

(A). Background

(i). In order to harness the potential of Renewable Energy (RE) resources in the country, the Government of Pakistan (GoP) formulated a policy titled "Policy for Development of Renewable Energy for Power Generation 2006" (the "RE Policy"). The said policy had been in field since 2006 under which both Federal Government and the Provincial Governments had been supporting the implementation of RE projects in the country.

(ii). In consideration of the above, the Federal and Provincial Governments had been issuing Letter of Intent (LoI) to various developers for setting up different type of RE projects across the country. In this regard, Energy Department/ Pakhtunkhwa Energy Development Organization (PEDO) of the province of Khyber Pakhtunkhwa (KPK) issued LoI to FAS Power Trading Company KSA/FAS Energy-FE/the Sponsor(s) for setting up a 50.00 MW_P solar based generation facility/Solar Power Plant/Solar Farm at tehsil Kulachi & district D.I. Khan in the province of KPK. In order to implement the project, the Sponsors got incorporated a Special Purpose Vehicle (SPV) in the name of FAS Energy Pakistan (SMC-Private) Limited (FEPSMCPL).

(iii). According to the terms and conditions of the LoI, the Sponsors were required to carry out and complete the feasibility study of the project at internationally acceptable standards. In consideration of the said, the Sponsors hired the services of different consultants and completed the feasibility study of the project which was approved by the Panel of Experts (PoE) appointed by



PEDO. After the said, FEPSMCPL decided to approach the Authority for the grant of generation licence.

(B). Filing of Application

(i). FEPSMCPL submitted an application on July 26, 2018 for the grant of generation licence in terms of Section-14B of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the "NEPRA Act") read with the relevant provisions of the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999 (the "Licensing Regulations").

(ii). The Registrar examined the submitted application and found some of the information/documentation required under the Licensing Regulations missing. Accordingly, Registrar directed FEPSMCPL for submitting the said information/documentation and the same was submitted on August 13, 2018. Accordingly, the Registrar submitted the application for the consideration of the Authority to decide the admission of the same or otherwise. The Authority considered the matter and found the form and content of the application in substantial compliance with Regulation-3 of the Licensing Regulations. Accordingly, the Authority admitted the application on September 05, 2018 for consideration of the grant of the generation licence as stipulated in Regulation-7 of the Licensing Regulations. The Authority also approved a notice of admission to be published in the press for inviting comments of general public, interested and affected persons in the matter as stipulated in Regulation-8 of the Licensing Regulations. Accordingly, the said notices were published in one (01) Urdu and one (01) English newspapers on September 08, 2018.

(iii). In addition to the above, the Authority also approved a list of stakeholders for seeking their comments for assistance of the Authority in the matter in terms of Regulation-9(2) of the Licensing Regulations. Accordingly, letters were sent to different stakeholders as per the approved list on September 11, 2018, soliciting their comments for assistance of the Authority.



(C). Comments of Stakeholders

(i). In reply to the above, the Authority received comments from two (02) stakeholders including Engineering Development Board of Ministry of Industries & Production (EDB) and Planning Commission of Ministry of Planning, Development and Reform (P&D). The salient points of the comments offered by the said stakeholders are summarized below:-

(a). EDB submitted that the "notice of admission" of application of FEPSMCPL for grant of generation licence did not find any clause of said application related to EDB. However, it is recommended that all efforts should be made to utilize indigenous potential available for the proposed project.

(b). P&D in its comments supported the request of FEPSMCPL for the grant of generation licence for its proposed 50.00 MW Photovoltaic Cell (PV) based generation facility/Solar Power Plant/Solar Farm being set up in tehsil Kulachi and district D.I. Khan.

(ii). The Authority reviewed the above comments of the stakeholders and considered it appropriate to seek the perspective of FEPSMCPL on the observations of EDB. On the said, FEPSMCPL submitted that the company will ensure utilization of all the possible local resources for the implementation of the project.

(iii). The Authority considered the above submissions of FEPSMCPL and considered it appropriate to proceed further in the matter as stipulated in the Licensing Regulations and NEPRA Licensing (Generation) Rules, 2000 (the "Generation Rules").



(D). Evaluation/Findings

(i). The Authority has reviewed the submissions of FEPSMCPL including the information provided in its application for the grant of the generation licence, comments of the stakeholders and the rejoinder in the matter. The Authority has also considered the feasibility study of the project, interconnection & dispersal arrangement studies etc., provisions of the RE Policy and the relevant rules & regulations.

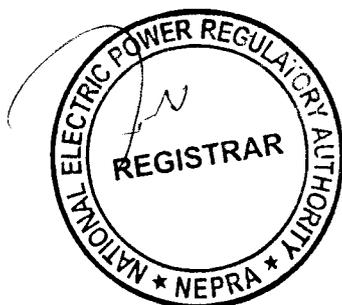
(ii). The Authority has observed that the main sponsor of the project includes FAS Power Trading Company KSA ("FAS Energy") which owns 100% shares of the company. FAS ENERGY is the RE development arm of FAWAZ AL HOKAIR Group through its Saudi FAS Holding Company (A Saudi Closed Joint Stock Company) based out of Saudi Arabia. Al Hokair is one of the largest group of companies in the Kingdom of Saudi Arabia involved in energy, retail, hotels and real estate business sectors, operates across Southern and Central Asia, Northern Africa, Middle East and Southern Europe. Al Hokair Group is based in Riyadh, Saudi Arabia and was established in March 1990. FAS Energy is a leading provider of utility-scale, commercial and industrial solar photovoltaic (PV) for utilities and other business interested in renewable energy. The approach of FAS Energy to solar energy generation is supported through its vertically integrated divisions that include development, procurement, construction, operations and maintenance services. FAS Energy has been providing RE solutions in the Middle East and beyond, with a focus on developing alternative energy capacity. It has its branches in MENA region/namely Jordan, Egypt and Morocco and Gulf Cooperation Council. FAS Energy presently has 300.00 MW_P of solar power projects in various stages of development. In recent times FAS Energy has signed two Power Purchase Agreements (PPAs) for 50.00 MW_P Solar Power Projects each with the Egyptian and Jordanian Governments. FAS Energy has also remained involved in advising government agencies, in affiliation with one of the leading construction companies in the Middle East, on building industry-leading solar parks. Saudi FAS Holding Company has a strong balance



sheet of over US \$ 5.00 Billion and a net profit of over US \$ 1.20 Billion in the year 2016.

(iii). Based on the financial strength and other evaluation parameters, PEDO issued Lol for development of the project. In this regard, the Sponsors have acquired a total of 250.00 acres of private land located at Village Badshahabad, Muza Luni, tehsil Kulachi, district D.I. Khan in the province of Khyber PakhtunKhwa. As explained above, for the implementation of the project, the sponsor has incorporated a SPV in the name of FEPSMCPL under Section-16 of the Companies Act, 2017 (XIX of 2017) having Corporate Universal Identification No. 0119912, dated May 22, 2018. The Registered/Business Office address of the company/SPV is 1st Floor, Boquival Tower, Plot No. 80, Street 27A, Crimson road, Sector H, DHA II, Islamabad. According to the Memorandum of Association, the principal object of the company includes the construction, building, erecting and operation of the proposed generation facility of FEPSMCPL. According to the submitted information, the total outlay of the project will be approximately US \$ 47.80 million which will be financed through a combination of debt (US \$ 38.20 million) and equity (US \$ 09.60 million) in a ratio of 80:20 which is in line with the benchmark set out in different determinations of the Authority in similar cases. It has been observed that Dubai Islamic has expressed its interest for financing the debt portion of the project. In consideration of the above, the Authority considers that the sponsors have strong financial and technical resources to carry out the project.

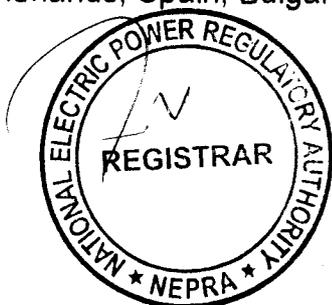
(iv). As explained above, the sponsors carried out a feasibility study of the project as stipulated in the term and conditions of the Lol. The said study, included, *inter alia*, data collection, detail of equipment of the solar based generation facility/solar power plant, optimization of the selected layout of the details, power production estimates based on solar irradiation data of the project site, technical details pertaining to selected Photo Voltaic (PV) cells and other allied equipment to be used in the solar power plant, electrical studies,



environmental study, geo technical investigation including soil testing , unit rate analysis, costing, economic & financial analysis and project financing, etc.

(v). The Authority has reviewed the feasibility study of the project and same has revealed that the company has considered various world class manufacturers of PV cells including Trian Solar, Canadian Solar, Jinko Solar, JA Solar, Hanwha Solarone, First Solar, Yingli Green, SFCE, ReneSola and Sunpower Corp. After duly considering various factors including (a). Solar resource position of the proposed location; (b). Capital cost of equipment/PV Cells; (c). Lead time for supply of equipment/PV Cells; (d). Expected energy yield of PV Cells; (e). Reliability and compliance with Grid Code; (f). Availability of suitable operation and maintenance teams (including easiness/availability of spare/replacement parts for PV Cells etc.), the company decided to select Jinko Solar. The feasibility study also optimized the size of the proposed generation facility/Solar Power Plant/Solar Farm to \approx 50.00 MW, having 153,846 x 325 W_p Poly Crystalline PV Modules of Jinko Solar (JKM 325PP-72-V) with single axis tracking arrangement.

(vi). The Authority has observed that Jinko Solar is one of the largest and most innovative solar module manufacturers in the world. It distributes its solar products and sells its solutions and services to a diversified international utility, commercial and residential customer base in China, the United States, Japan, Germany, the United Kingdom, Chile, South Africa, India, Mexico, Brazil, the United Arab Emirates, Italy, Spain, France, Belgium, and other countries and regions. Jinko Solar has built a vertically integrated solar product value chain, with an integrated annual capacity of 10.50 GW for silicon wafers, 7.40 GW for solar cells, and 12.60 GW for solar modules, as of June 30, 2019. JinkoSolar has over 13,500 employees across its 7 productions facilities globally, 15 oversea subsidiaries in Japan, Korea, Singapore, India, Turkey, Germany, Italy, Switzerland, United States, Canada, Mexico, Brazil, Chile, Australia and United Arab Emirates, and global sales teams in China, United Kingdom, France, Netherlands, Spain, Bulgaria, Greece, Romania, Ukraine, Jordan, Saudi Arabia,

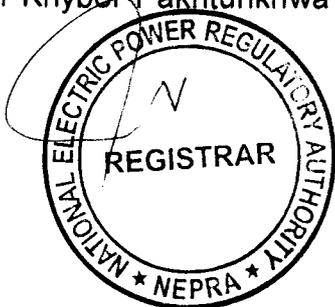


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Tunisia, Egypt, Morocco, Nigeria, Kenya, South Africa, Costa Rica, Colombia, Panama and Argentina. In view of the above, it is considered that the sponsors of the project have selected top of the line Tier-I company for supply of the PV panels. Further to said, the technology selected for PV cells for the project is polycrystalline which is a mature technology and is widely used due to its better energy yield to cost ratio. In view of the said, the Authority is of the considered opinion that the selected technology for PV cells is mature, cost effective and time tested. Further, the Authority considers that the selected technology has distinctive features including versatility, flexibility and good performance.

(iv). The Authority has observed that the sponsors of the project carried out the required GIS to determine the arrangement for dispersal of electric power from the proposed generation facility/Solar Power Plant/Solar Farm. According to the said study, the interconnection arrangement for dispersal of electric power will be on 132kV voltage and will be consisting of a Double Circuit (D/C) transmission line (on ACSR Rail conductor measuring around 2.50 km approximately) for making an In-Out arrangement of one circuit of 132 kV D/C transmission Line connecting another PV solar project in the name of Kulachi Solar Power (Pvt.) Limited and 132 kV Kulachi Grid Station of Peshawar Electric Supply Company Limited (PESCO). In this regard, PESCO has approved the above mentioned GIS, confirming that all the relevant parameters are within permissible limits of the Grid Code.

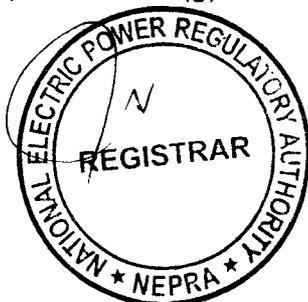
(vii). The Authority observes that the proposed project, for which generation licence is being sought, is based on RE source and does not cause pollution as in the case of conventional power plants. However, the operation of the generation facility/Solar Power Plant/Solar Farm may cause soil pollution, water pollution and noise pollution during construction and operation. In this regard, the Authority has observed that FEPSMCPL carried out the Initial Environment Examination (IEE) study for the project and submitted the same for the consideration and approval of Environmental Protection Agency, Government of Khyber Pakhtunkhwa (EPAGoKPK). In this regard, EPAGoKPK had already



issued a No Objection Certificate (NOC) to the company for the construction of the project.

(viii). In terms of Rule-3 of the Generation Rules, the Authority may grant a generation licence to any person to engage in the generation business. The said rule stipulates various conditions pertaining to the grant of generation licence as explained in Rule-3(2), Rule-3(3), Rule-3(4) and Rule-3(5) of the Generation Rules. In the particular case under consideration, the Authority considers that conditions of Rule-3(2) and Rule-3(3) stand satisfied as FEPSMCPL has provided details of location, technology, size, net capacity/energy yield, interconnection arrangements, technical limits, technical functional specifications and other details specific to the generation facility/Solar Power Plant/Solar Farm. The provision of Rule-3(4) of the Generation Rules regarding holding a public hearing is not applicable as there was no issue which required this exercise.

(ix). The Rule-3(5) of the Generation Rules stipulates that the Authority may refuse to issue a generation licence where the site, technology, design, fuel, tariff or other relevant matters pertaining to the generation facility proposed in an application for a generation licence are either not suitable on environmental grounds or do not satisfy the least cost option criteria. In this regard, the Rule-3(5) of the Generation Rules also stipulates the conditions pertaining to least cost option criteria which include (a). sustainable development or optimum utilization of the renewable or non-renewable energy resources proposed for generation of electric power; (b). the availability of indigenous fuel and other resources; (c). the comparative costs of the construction, operation and maintenance of the proposed generation facility against the preferences indicated by the Authority; (d). the cost and right-of-way considerations related to the provision of transmission and interconnection facilities; (e). the constraints on the transmission system likely to result from the proposed generation facility and the costs of the transmission system expansion required to remove such constraints; (f). the short-term and the long-term forecasts for additional capacity requirements; (g). the tariff resulting or likely to result from the construction or



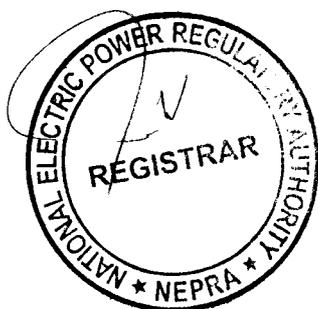
operation of the proposed generation facility; and (h). the optimum utilization of various sites in the context of both the short-term and the long-term requirements of the electric power industry as a whole.

(x). The Authority considers that the proposed project will result in optimum utilization of the RE of the province of KPK which is untapped, resulting in pollution free electric power. It is pertinent to mention that solar is an indigenous RE resource and such resources should have a preference for the energy security. There is a global trend of reduction in the prices of PV Cells which results in lower tariffs as is evident from various determinations of the Authority. These lower tariffs will result in reduction of the overall basket price which will be beneficial to the public at large.

(xi). As explained in the preceding paragraphs, the sponsor of the project carried out the GIS which concludes that the project will not face any constraints in transmission system. Further, being located at reasonable distance from the thin population of the area, the project will not result in cost and right-of-way issues for the provision of transmission and interconnection facilities. In view of the said, the Authority considers that the project of FEPSMCPL fulfills the eligibility criteria for grant of generation licence as stipulated in the NEPRA Act, rules, regulations and other applicable documents.

(E). Grant of Generation Licence

(i). The sustainable and affordable energy/electricity is a key prerequisite for socio-economic development of any country. In fact, the economic growth of any country is directly linked with the availability of safe, secure, reliable and cheaper supply of energy/electricity. In view of the said reasons, the Authority is of the considered opinion that for sustainable development, all indigenous power generation resources including RE must be developed on priority basis.

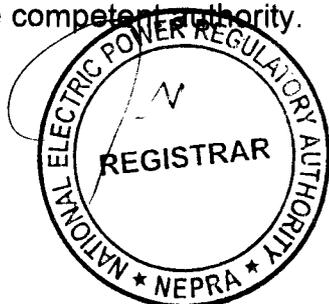


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(ii). The existing energy mix of the country is heavily skewed towards thermal power plants, mainly operating on imported fossil fuel. The continuous import of fossil fuel not only creates pressure on the precious foreign exchange reserves of the country but is also an environmental concern. Therefore, in order to achieve sustainable development, it is imperative that indigenous RE resources are given priority for electric power generation and their development is encouraged. Recently, the world market for RE technologies have seen a sharp declining trend in terms of prices, making these technologies very attractive and cost effective for generation of electric power. Further, there are developments in the sector which are paving the way to address the intermittency issues of these technologies. In view of the said, the Authority is of the considered opinion that there is a worldwide trend to increase the share of RE in the energy mix of any country and it is very likely that the Govt. of Pakistan will also be considering to increase the share of RE substantially in the coming years.

(iii). The Authority considers that the proposed project of FEPSMCPL will help in diversifying the energy portfolio as well increasing share of RE in the country. Further, it will not only enhance the energy security of the country by reducing the dependence on imported fuel but will also help in reducing carbon emissions by generating clean electricity, thus improving the environment.

(iv). As explained in the preceding paragraphs, FEPSMCPL has provided the details of location, technology, size, net capacity/energy yield, interconnection arrangements, technical details and other related information for the proposed generation facility/Solar Power Plant/Solar Farm. In this regard, the Authority has observed that Sponsors/FEPSMCPL has acquired private land to the tune 250.00 acres for setting up the generation facility/Solar Power Plant/Solar Farm. The said details are being incorporated in the generation licence. The Authority directs FEPSMCPL to utilize the allocated land exclusively for the proposed generation facility/Solar Power Plant/Solar Farm and not to carry out any other activity on the said allocated land except with the prior approval of the competent authority.



(v). The term of a generation licence under Rule-5(1) of the Generation Rules is required to commensurate with the maximum expected life of the units comprised in a generating facility, except where an applicant for a generation licence consents to a shorter term. According to the information provided by FEPSMCPL, its generation facility/Solar Power Plant/Solar Farm will achieve COD by June 30, 2020 and will have a useful life of more than twenty five (25) years from its COD. In this regard, FEPSMCPL has requested that the term of the proposed generation licence may be fixed as twenty five (25) years. The Authority considers that said submission of FEPSMCPL about the useful life of the generation facility/Solar Power Plant/Solar Farm and the subsequent request to fix the term of the generation licence is consistent with international benchmarks therefore the Authority fixes the term of the generation licence as twenty five (25) years from COD of the project.

(vi). Regarding the tariff, it is hereby clarified that under Section-7(3)(a) of the NEPRA Act, determining tariff, rate and charges, etc. is the sole prerogative of the Authority. In this regard, it is pertinent to mention that FEPSMCPL has filed a tariff petition for determination of its tariff on cost plus basis. The Authority has admitted the same and is expected to be decided in due course of time. Further, to the said, Cabinet Committee on Energy (CCoE) through its decision dated April 04, 2019 has decided that projects of RE at the stage of Lol will be going through Competitive Bidding (CB). In view of the said, it is still not clear whether FEPSMCPL will be having a cost plus tariff or a tariff through CB. In view of the said, the Authority considers appropriate to direct FEPSMCPL to charge the power purchaser only such tariff which has been determined, approved or specified by it. In view of the said, the Authority decides to include a specific article in the generation licence. Further, the Authority directs FEPSMCPL to adhere to the said in letter and spirit without any exception.

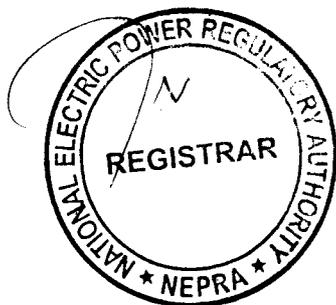


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(vii). About the compliance with the environmental standards, as discussed in the preceding paragraphs, FEPSMCPL has provided the NOC from EPAGoKPK and has confirmed that the project will comply with the required standards during the term of the generation licence. In view of the importance of the issue, the Authority has decided to include a specific article in the generation licence along with other terms and conditions making it obligatory for FEPSMCPL to comply with relevant environmental standards at all times. Further, the Authority directs FEPSMCPL to submit a report on bi-annual basis, confirming that operation of its generation facility/Solar Power Plant/Solar Farm is in compliance with the required environmental standards as prescribed by the concerned environmental protection agency.

(viii). The proposed generation facility/Solar Power Plant/Solar Farm of FEPSMCPL will be using RE resource for generation of electric power. Therefore, the project may qualify for the carbon credits under the Kyoto Protocol. Under the said protocol, projects coming into operation up to the year 2020 can qualify for the carbon credits. FEPSMCPL has informed that the project will achieve COD by June 30, 2020, which is within the deadline of the Kyoto Protocol. In view of the said, an article for carbon credits and its sharing with the power purchaser has been included in the generation licence. Accordingly, the Authority directs FEPSMCPL to initiate the process in this regard at the earliest so that proceeds for the carbon credits are materialized. FEPSMCPL shall be required to share the proceeds of the carbon credits with the power purchaser as stipulated in the generation licence.

(ix). In view of the above, the Authority hereby approves the grant of generation licence to FEPSMCPL on the terms and conditions set out in the generation licence annexed to this determination. The grant of generation licence will be subject to the provisions contained in the NEPRA Act, relevant rules, regulations framed thereunder and other applicable documents.



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Authority:

Engr. Rafique Ahmed Shaikh
(Member)

Rafique
18/12/19

Engr. Rehmatullah Baloch
(Member)

Saif Ullah Chattha
(Member)

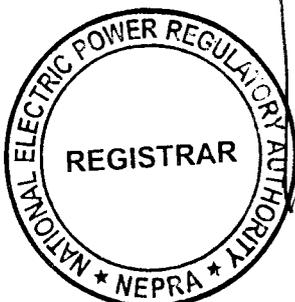
Saif Ullah
19.12.2019

Engr. Bahadur Shah
(Member/Vice Chairman)

[Signature]

Engr. Tauseef H. Farooqi
(Chairman)

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27/12/19

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**National Electric Power Regulatory Authority
(NEPRA)
Islamabad – Pakistan**

GENERATION LICENCE

No. SPGL/30/2019

In exercise of the powers conferred upon the National Electric Power Regulatory Authority (NEPRA) under Section 14B of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997/Amendment Act, 2018, the Authority hereby grants a Generation Licence to:

FAS ENERGY PAKISTAN (SMC-PRIVATE) LIMITED

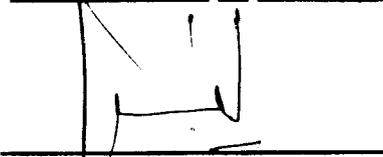
Incorporated Under Section-16
of the Companies Act 2017 (XIX of 2017) Having Corporate Universal
Identification No. 0119912, dated May 22, 2018

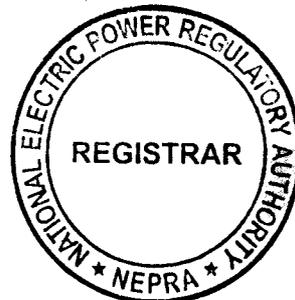
**for its Generation Facility/Solar Farm/Solar Power Plant
Located at at Village Badshahabad, Mouza Luni, Tehsil Kulachi
District D.I. Khan in the Province of Khyber PakhtunKhwa**

(Total Installed Capacity: ≈50.00 MW_p Gross)

to engage in generation business subject to and in accordance with the
Articles of this Licence.

Given under my hand this on 27th day of December Two
Thousand & Nineteen and expires on 29th day of June Two
Thousand & Forty-Five.

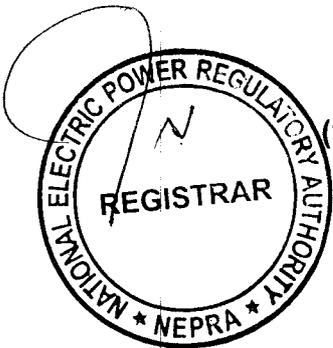

Registrar



Article-1 **Definitions**

1.1 In this licence

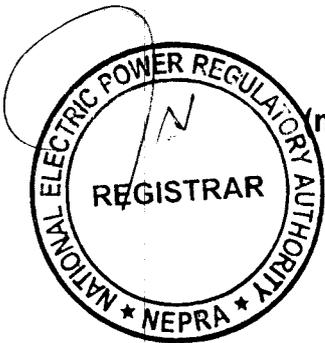
- (a). "Act" means the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 as amended or replaced from time to time;
- (b). "AEDB" means the Alternative Energy Development Board or any other entity created for the like purpose established by the GoP to facilitate, promote and encourage development of renewable energy in the country;
- (c). "Applicable Documents" mean the Act, the rules and regulations framed by the Authority under the Act, any documents or instruments issued or determinations made by the Authority under any of the foregoing or pursuant to the exercise of its powers under the Act, the Grid Code, the applicable Distribution Code, the Commercial Code if any, or the documents or instruments made by the Licensee pursuant to its generation licence, in each case of a binding nature applicable to the Licensee or, where applicable, to its affiliates and to which the Licensee or any of its affiliates may be subject;
- (d). "Applicable Law" means all the Applicable Documents;
- (e). "Authority" means the National Electric Power Regulatory Authority constituted under Section-3 of the Act;
- (f). "Bus Bar" means a system of conductors in the generation facility/Solar Power Plant/Solar Farm of the Licensee on which the electric power from all the photovoltaic cells is collected for supplying to the Power Purchaser;



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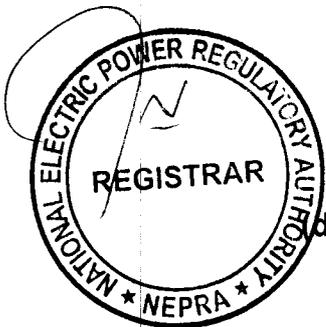
- (g). "Carbon Credits" mean the amount of Carbon Dioxide (CO₂) and other greenhouse gases not produced as a result of generation of electric energy by the generation facility/Solar Power Plant/Solar Farm and other environmental air quality credits and related emissions reduction credits or benefits (economic or otherwise) related to the generation of electric energy by the generation facility/Solar Power Plant/Solar Farm, which are available or can be obtained in relation to the generation facility/Solar Power Plant/Solar Farm after the COD;
- (h). "Commercial Code" means the National Electric Power Regulatory Authority (Market Operator, Registration, Standards and Procedure) Rules, 2015 as amended or replaced from time to time;
- (i). "Commercial Operations Date (COD)" means the day immediately following the date on which the generation facility/Solar Power Plant/Solar Farm of the Licensee is commissioned;
- (j). "Commissioning" means the undertaking of the Commissioning Tests of the generation facility/Solar Power Plant/Solar Farm as stipulated in the EPA;
- (k). "CPPA-G" means Central Power Purchasing Agency (Guarantee) Limited or any other entity created for the like purpose;
- (l). "Distribution Code" means the distribution code prepared by the concerned XW-DISCO and approved by the Authority, as may be revised from time to time with necessary approval of the Authority;
- (m). "Energy Purchase Agreement (EPA)" means the energy purchase agreement, entered or to be entered into by and between the Power Purchaser and the Licensee, for the purchase and sale of electric energy generated by the generation facility/Solar Power Plant/Solar Farm, as may be amended by the parties thereto from time to time;



- (n). "Generation Rules" mean the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000 as amended or replaced from time to time;
- (o). "Grid Code" means the grid code prepared and revised from time to time by NTDC with necessary approval of the Authority;
- (p). "GoKPK" means the Government of the province of Khyber Pakhtunkhwa acting through the PEDO which has issued letter of intent to the Licensee for the design, engineering, construction, insuring, commissioning, operation and maintenance of the generation facility/Solar Power Plant/Solar Farm;
- (q). "GoP" means the Government of Pakistan acting through the AEDB which has issued or will be issuing to the Licensee a LoS for the design, engineering, construction, insuring, commissioning, operation and maintenance of the generation facility/Solar Power Plant/Solar Farm;
- (r). "IEC" means "the International Electrotechnical Commission or its successors or permitted assigns;
- (s). "IEEE" means the Institute of Electrical and Electronics Engineers or its successors or permitted assigns;
- (t). "Implementation Agreement (IA)" means the implementation agreement signed or to be signed between the GoP and the Licensee in relation to this particular generation facility/Solar Power Plant/Solar Farm, as may be amended from time to time;
- (u). "Letter of Support (LoS)" means the letter of support issued or to be issued by the GoP through the AEDB to the Licensee;
- (v). "Licensee" means FAS Energy Pakistan (SMC-Private) Limited or its successors or permitted assigns;



- (w). "Licensing Regulations" mean the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999 as amended or replaced from time to time;
- (x). "Net Delivered Energy" means the net electric energy expressed in kWh generated by the generation facility/Solar Power Plant/Solar Farm of the Licensee at its outgoing Bus Bar and delivered to the Power Purchaser;
- (y). "NTDC" means National Transmission and Despatch Company Limited or its successors or permitted assigns;
- (z). "PEDO" means Pakhtunkhwa Energy Development Organization or any other entity created for the like purpose established by the GoKPK to facilitate, promote and encourage development of private sector participation for development of projects for electric power in the province of Khyber PakhtunKhwa/KPK;
- (aa). "PESCO" means Peshawar Electric Supply Company Limited or its successors or permitted assigns;
- (bb). "Policy" means the Policy for Development of Renewable Energy for Power Generation, 2006 of GoP as amended or replaced from time to time;
- (cc). "Power Purchaser" means CPPA-G which will be purchasing electric energy from the Licensee either on behalf of all XW-DISCOs or any single XW-DISCO, pursuant to an EPA for procurement of electric energy;
- (dd). "SCADA System" means the supervisory control and data acquisition system for gathering of data in real time from remote locations to control equipment and conditions;



- (ee). "Solar Power Plant/Solar Farm" means a cluster of photovoltaic cells in the same location used for production of electric power;
- (ff). "XW-DISCO" means an Ex-WAPDA distribution company engaged in the distribution of electric power".

1.2 The words and expressions used but not defined herein bear the meaning given thereto in the Act or Generation Rules and Licensing Regulations issued under the Act.

Article-2 **Applicability of Law**

This licence is issued subject to the provisions of the Applicable Law, as amended from time to time.

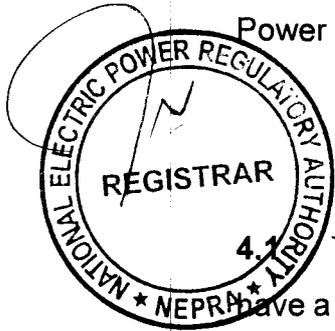
Article-3 **Generation Facilities**

3.1 The location, size (capacity in MW), technology, interconnection arrangements, technical limits, technical functional specifications and other details specific to the generation facility/Solar Power Plant/Solar Farm of the Licensee are set out in Schedule-I of this licence.

3.2 The net capacity/Net Delivered Energy of the generation facility/Solar Power Plant/Solar Farm of the Licensee is set out in Schedule-II of this licence. The Licensee shall provide the final arrangement, technical and financial specifications and other specific details pertaining to its generation facility/Solar Power Plant/Solar Farm before its COD.

Article-4 **Term of Licence**

4.1 This licence shall become effective from the date of its issuance and will have a term of twenty-five (25) years from the COD of the generation facility/Solar Power Plant/Solar Farm of the Licensee subject to Section 14-B of the Act.



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4.2 Unless suspended or revoked earlier or Licence ceases to have effect, the Licensee may apply for renewal of this Licence ninety (90) days prior to the expiry of the above term, as stipulated in the Licensing Regulations.

Article-5
Licence fee

The Licensee shall pay to the Authority the licence fee as stipulated in the National Electric Power Regulatory Authority (Fees) Rules, 2002 as amended or replaced from time to time.

Article-6
Tariff

The Licensee shall charge only such tariff from the Power Purchaser which has been determined, approved or specified by the Authority.

Article-7
Competitive Trading Arrangement

7.1 The Licensee shall participate in such manner as may be directed by the Authority from time to time for development of a Competitive Trading Arrangement.

7.2 The Licensee shall in good faith work towards implementation and operation of the aforesaid Competitive Trading Arrangement in the manner and time period specified by the Authority. Provided that any such participation shall be subject to any contract entered into between the Licensee and another party with the approval of the Authority.

7.3 Any variation or modification in the above-mentioned contracts for allowing the parties thereto to participate wholly or partially in the Competitive Trading Arrangement shall be subject to mutual agreement of the parties thereto and such terms and conditions as may be approved by the Authority.



Article-8 **Maintenance of Records**

For the purpose of sub-rule(1) of Rule-19 of the Generation Rules, copies of records and data shall be retained in standard and electronic form and all such records and data shall, subject to just claims of confidentiality, be accessible by authorized officers of the Authority.

Article-9 **Compliance with Performance Standards**

The Licensee shall comply with the relevant provisions of the National Electric Power Regulatory Authority Performance Standards (Generation) Rules 2009 as amended or replaced from time to time.

Article-10 **Compliance with Environmental & Safety Standards**

10.1 The generation facility/Solar Power Plant/Solar Farm of the Licensee shall comply with the environmental and safety standards as may be prescribed by the relevant competent authority from time to time.

10.2 The Licensee shall provide a certificate on a bi-annual basis, confirming that the operation of its generation facility/Solar Power Plant/Solar Farm is in conformity with required environmental standards as prescribed by the relevant competent authority.

Article-11 **Power off take Point and Voltage**

The Licensee shall deliver the electric energy to the Power Purchaser at the outgoing Bus Bar of its generation facility/Solar Power Plant/Solar Farm. The Licensee shall be responsible for the up-gradation (step up) of generation voltage up to the required dispersal voltage level.



10

Article-12 **Performance Data**

12.1 The Licensee shall install properly calibrated automatic computerized solar radiation recording device(s) at its generation facility/Solar Power Plant/Solar Farm for recording of data.

12.2 The Licensee shall install SCADA System or compatible communication system at its generation facility/Solar Power Plant/Solar Farm as well as at the side of the Power Purchaser.

12.3 The Licensee shall transmit the solar radiation data and power output data of its generation facility/Solar Power Plant/Solar Farm to the control room of the Power Purchaser.

Article-13 **Provision of Information**

In accordance with provisions of Section-44 of the Act, the Licensee shall be obligated to provide the required information in any form as desired by the Authority without any exception.

Article-14 **Emissions Trading /Carbon Credits**

The Licensee shall process and obtain expeditiously the Carbon Credits admissible to the generation facility/Solar Power Plant/Solar Farm. The Licensee shall share the said proceeds with the Power Purchaser as per the Policy.

Article-15 **Design & Manufacturing Standards**

The photovoltaic cells and other associated equipment of the generation facility/Solar Power Plant/Solar Farm shall be designed, manufactured and tested according to the latest IEC, IEEE standards or any other equivalent standard in the matter. All the plant and equipment of generation facility/Solar Power Plant/Solar Farm shall be unused and brand new.



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Article-16
Power Curve

The power curve for the individual photovoltaic cell provided by the manufacturer and as mentioned in Schedule-I of this generation licence, shall form the basis in determining the cumulative power curve of the generation facility/Solar Power Plant/Solar Farm.

Article-17
Compliance with Applicable Law

The Licensee shall comply with the provisions of the Applicable Law, guidelines, directions and prohibitory orders of the Authority as issued from time to time.

Article-18
Corporate Social Responsibility

The Licensee shall provide the descriptive as well as monetary disclosure of its activities pertaining to corporate social responsibility (CSR) on an annual basis.

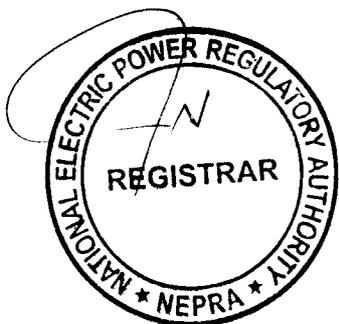
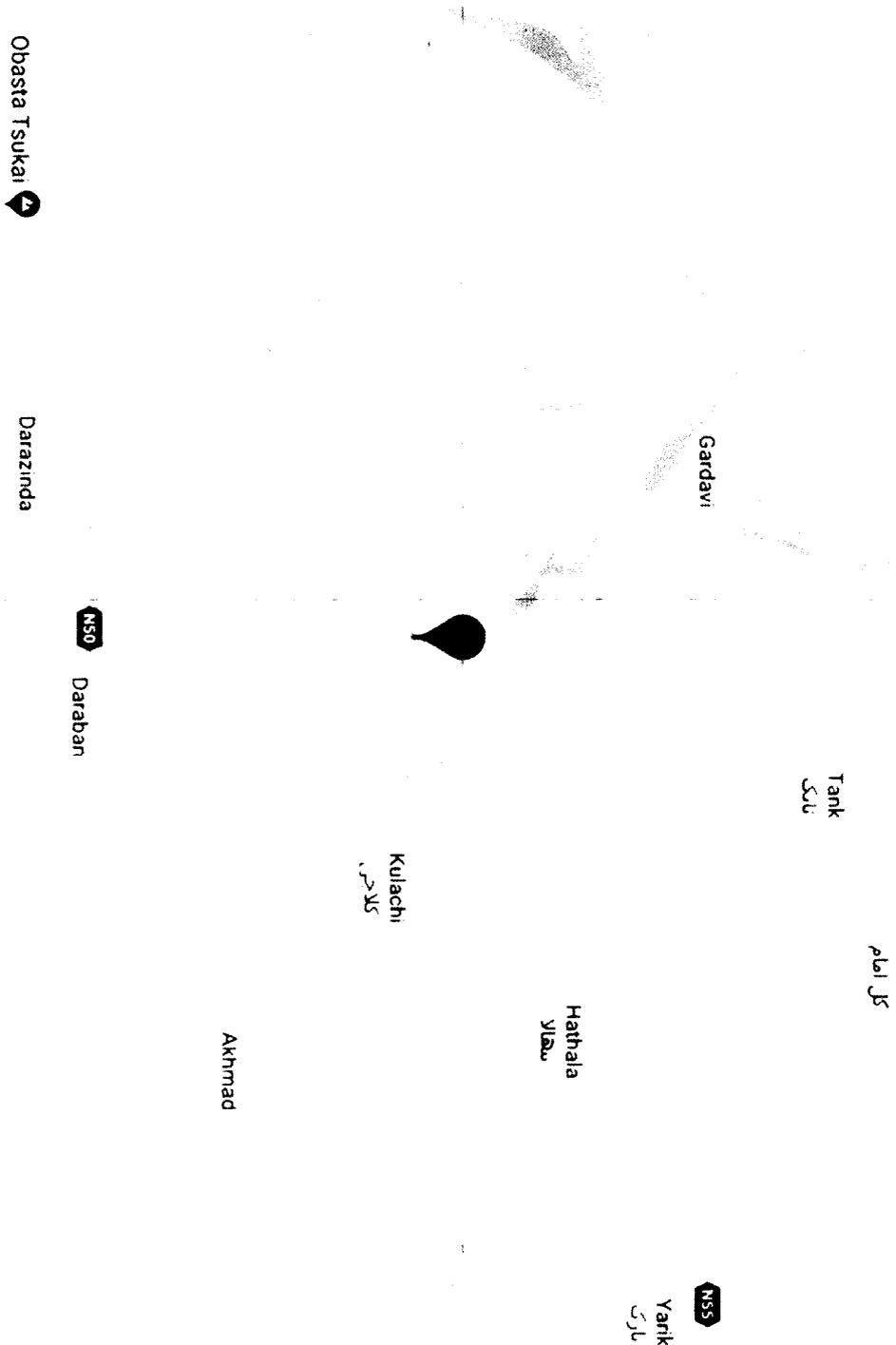


SCHEDULE-I

The Location, Size (i.e. Capacity in MW), Type of Technology, Interconnection Arrangements, Technical Limits, Technical/Functional Specifications and other details specific to the Generation Facilities of the Licensee are described in this Schedule.



**Location of the
Generation Facility/Solar Power Plant/Solar Farm
of the Licensee**



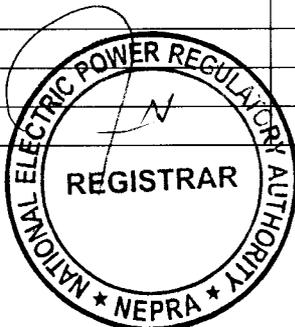
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**Land Coordinates of the
 Generation Facility/Solar Power Plant/Solar Farm
 of the Licensee**

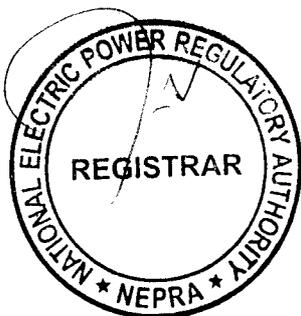
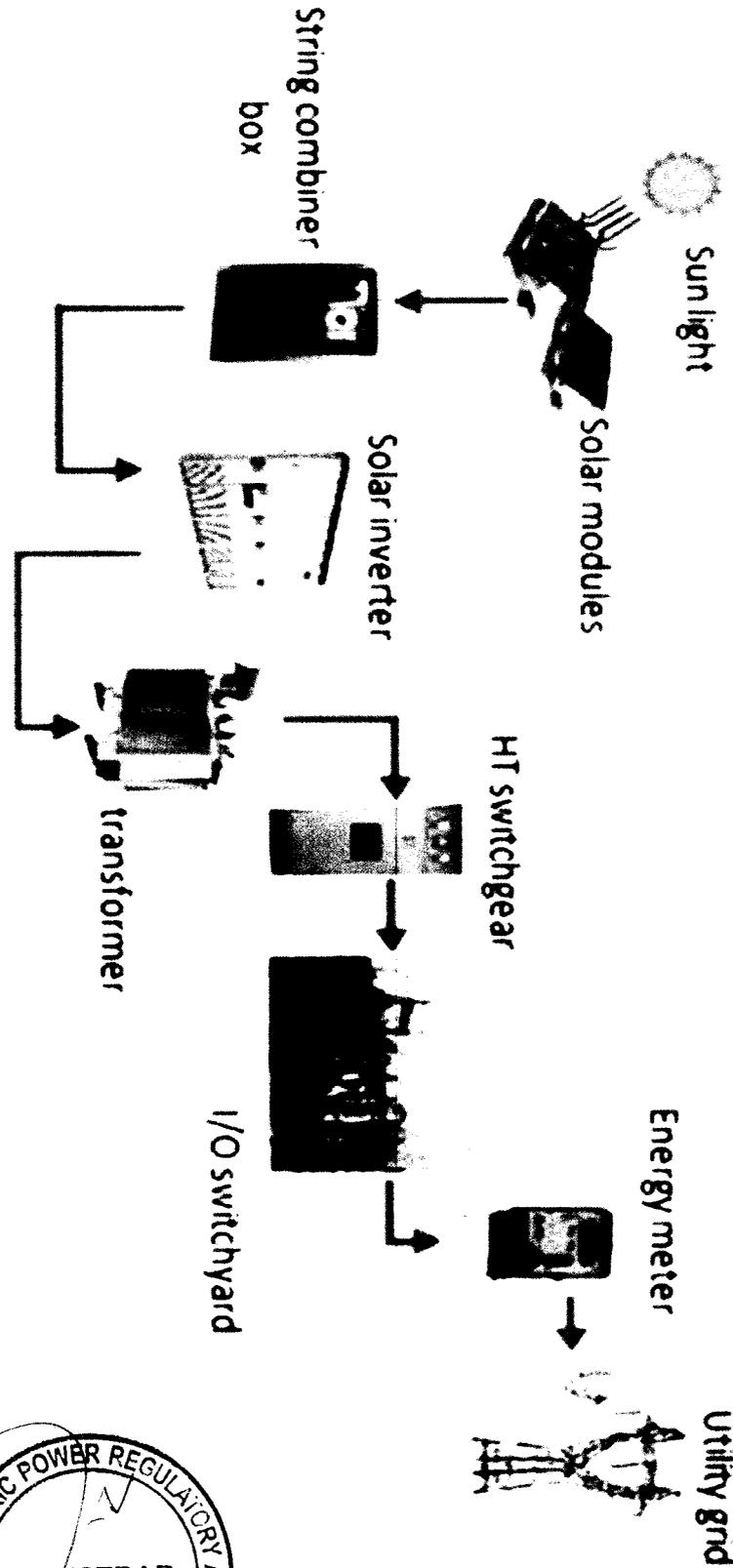


Project Land Coordinates

Point	Latitude (N)	Longitude (E)
C-1	31.958981	70.269122
C-2	31.958897	70.278165
C-3	31.947916	70.278007
C-4	31.948051	70.268963



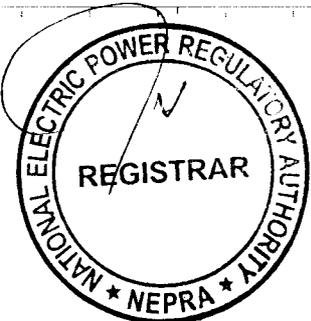
Process Flow Diagram
of the Generation Facility/Solar Power Plant/Solar Farm
of the Licensee



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Single Line Diagram
of the Generation Facility/Solar Power Plant/Solar Farm
of the Licensee



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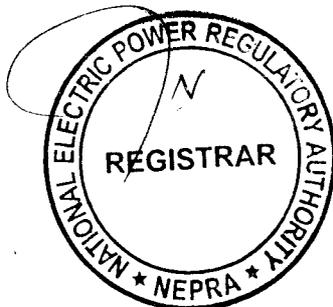
**Interconnection Arrangement for
Dispersal of Electric Energy/Power from the Generation
Facility/ Solar Power Plant/Solar Farm**

The electric power generated from the generation facility/Solar Power Plant/Solar Farm of the Licensee/ FAS Energy Pakistan (SMC-Private) Limited / FEPSMCPL shall be dispersed to the load centre of PESCO.

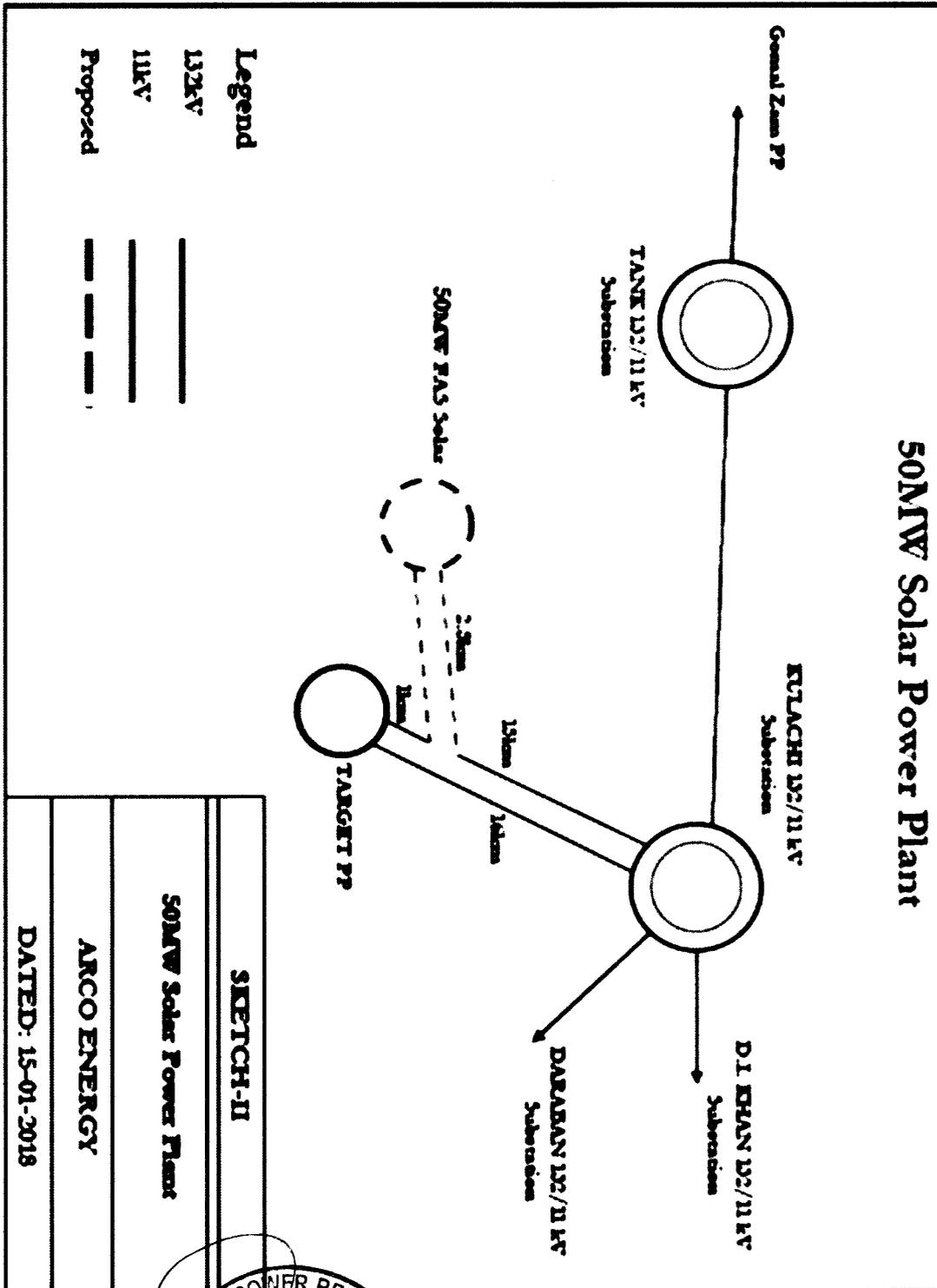
(2). The proposed Interconnection Arrangements/Transmission Facilities for dispersal of power from generation facility/Solar Power Plant/Solar Farm of the Licensee/FEPSMCPL will consist of the following: -

(a). A 132 kV D/C transmission line (measuring approx. 2.50 km long on ACSR Rail Conductor) for making an In-Out of one circuit of 132 KV D/C transmission line between 132 KV Kulachi Grid Station of PESCO and Kulachi Solar Power (Private) Limited connecting the proposed generation facility/Solar Power Plant/Solar Farm with the system of PESCO;

(3). Any change in the above Interconnection Arrangement/Transmission Facility duly agreed by Licensee/FEPSMCPL and PESCO, shall be communicated to the Authority in due course of time.



**Schematic Diagram of the Interconnection
 Arrangement/Transmission Facility for Dispersal of Power
 from the Generation Facility/Solar Power Plant /Solar Farm**



Detail of Generation Facility/Solar Power Plant/ Solar Farm

(A). General Information

(i).	Name of the Company/ Licensee	FAS Energy Pakistan (SMC-Private) Limited
(ii).	Registered/Business Office of the Company	1 st Floor, Boquival Tower, Plot No. 80, Street 27A, Crimson road, Sector H, DHA II, Islamabad.
(iii).	Location of the Generation Facility/Solar Power Plant/Solar Farm	Village Badshahabad, Mouza Luni, Tehsil Kulachi, District D.I. Khan in the Province of Khyber Pakhtunkhwa
(iv).	Type of Generation Facility Solar Power Plant/Solar Farm	Solar Photovoltaic (PV)

(B). Solar Power Generation Technology & Capacity

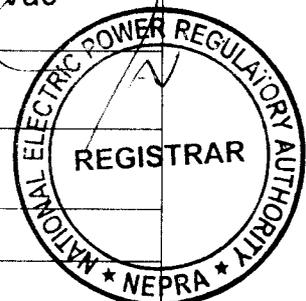
(i).	Type of Technology	Poly Crystalline PV Cell
(ii).	System Type	Grid Connected
(iii).	Installed Capacity of Solar (MW)	≈50.00 MW _p

(C). Technical Details of Equipment

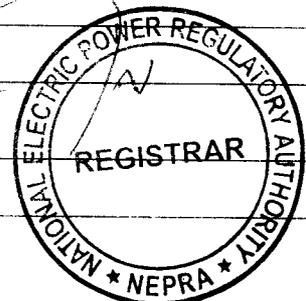
(a).	<u>Solar Panels – PV Modules</u>	
(i).	Type of Module	Jinko Solar (JKM 325PP-72-V)
(ii).	Type of Cell	Poly-crystalline 156×156mm (6 inch)
(iii).	Number of Cells	72 (6×12)
(iv).	Dimension of each Module	1956 mm x 992 mm
(v).	Module Surface Area	1.94 m ²
(vi).	Weight	26.5 kg (58.4 lbs.)
(vii).	Frame of Panel	Anodized Aluminum Alloy
(viii).	Junction Box	IP67 Rated



(ix).	Linear Performance Warranty	10 Year product Warranty 25 Year Linear Power Warranty
(x).	Maximum Power (P_{max})	325Wp
(xi).	Maximum Power Voltage (V_{mp})	37.6V
(xii).	Maximum Power Current (I_{mp})	8.66 A
(xiii).	Open-Circuit Voltage (V_{oc})	46.7V
(xiv).	Short-Circuit Current (I_{sc})	9.10A
(xv).	Module Efficiency	16.75%
(xvi).	Maximum System Voltage	1500VDC (IEC)
(xvii).	Maximum Series Fuse rating	15A
(xviii).	Power Tolerance	0~+3%
(xix).	Compliance	ISO 9001:2008, ISO 14001:2004, OHSAS18001 certified factory IEC 61215, IEC 61730 certified product
(b).	<u>PV Inverter</u>	
(i).	Inverter Type	String Inverter Configuration (Huawei 2000-36KTL)
(ii).	Number of Inverters	1000
(c).	<u>Efficiency</u>	
(i).	Max. Efficiency	98.8%
(ii).	European Efficiency	98.6%
(d).	<u>Input</u>	
(i).	Max. DC Usable Power	40,800 W
(ii).	Max. Input Voltage	1,100 V
(iii).	Max. Current per MPPT	22 A
(iv).	Max. Short Circuit Current per MPPT	30A
(v).	Min. Operating Voltage / Start Input Voltage	200 V / 250 V
(vi).	Full Power MPPT Voltage Range	480 V ~ 850 V @380Vac/ 400Vac 580V~850V@480Vac
(vii).	MPPT Operating Voltage Range	200 V ~ 1000 V
(viii).	Rated Input Voltage	620 V @380Vac / 400Vac 720V@480Vac
(ix).	Max. Number of Inputs	8
(x).	Number of MPP Trackers	4



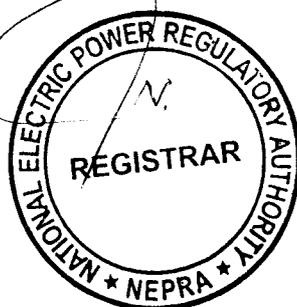
(e).	<u>Output</u>	
(i).	Rated AC Active Power	36,000 W
(ii).	Max. AC Apparent Power	40,000 VA
(iii).	Max. AC Active Power (cosφ=1)	Default 40,000W; 36,000W optional in settings
(iv).	Rated Output Voltage	220V / 380V, 230V / 400V, default 3W+N+PE; 3W+PE optional in settings 277V/480V, 3W+PE
(v).	Rated AC Grid Frequency	50 Hz / 60 Hz
(vi).	Max. Output Current(@380V/400V/480V)	60.8 A/57.8A/48.2A
(f).	<u>General</u>	
(i).	Dimensions (W×H×D)	930 × 550 × 260 mm (36.6 x 21.7 x 10.2 inches)
(ii).	Weight	55 kg (121 lb.)
(iii).	Max. Operating Altitude Without Derating	4,000 m (13,123 ft.)
(iv).	Relative Humidity	0 ~ 100%
(v).	Protection Rating	IP65
(g).	<u>Single Axis Trackers</u>	
(i).	Tracker Type	Exosun
(ii).	Tracked Area	Up to 1200m ²
(iii).	Structure	Maintenance-free movement transmission, HDG/Galvanized Steel/Stainless Steel/Composite
(iv).	DC string management	Cable trays or raceways
(v).	Drive Type	Brushless gear motor, 3 phase, 400 VAC (CE) or 460 VAC (UL)
(h).	<u>Design Assumption</u>	
(i).	Plant Arrangement	Single Axis solar tracker
(ii).	Tracker Rotation	+ 50
(iii).	PV Module Technology	p-Si
(iv).	Pitch E/W [m]	5.8
(v).	PV module rated power [W _P]	325
(vi).	Ratio Modules/string	20
(vii).	Ratio Strings/Inverter	8/7
(viii).	Number of Inverters	1000



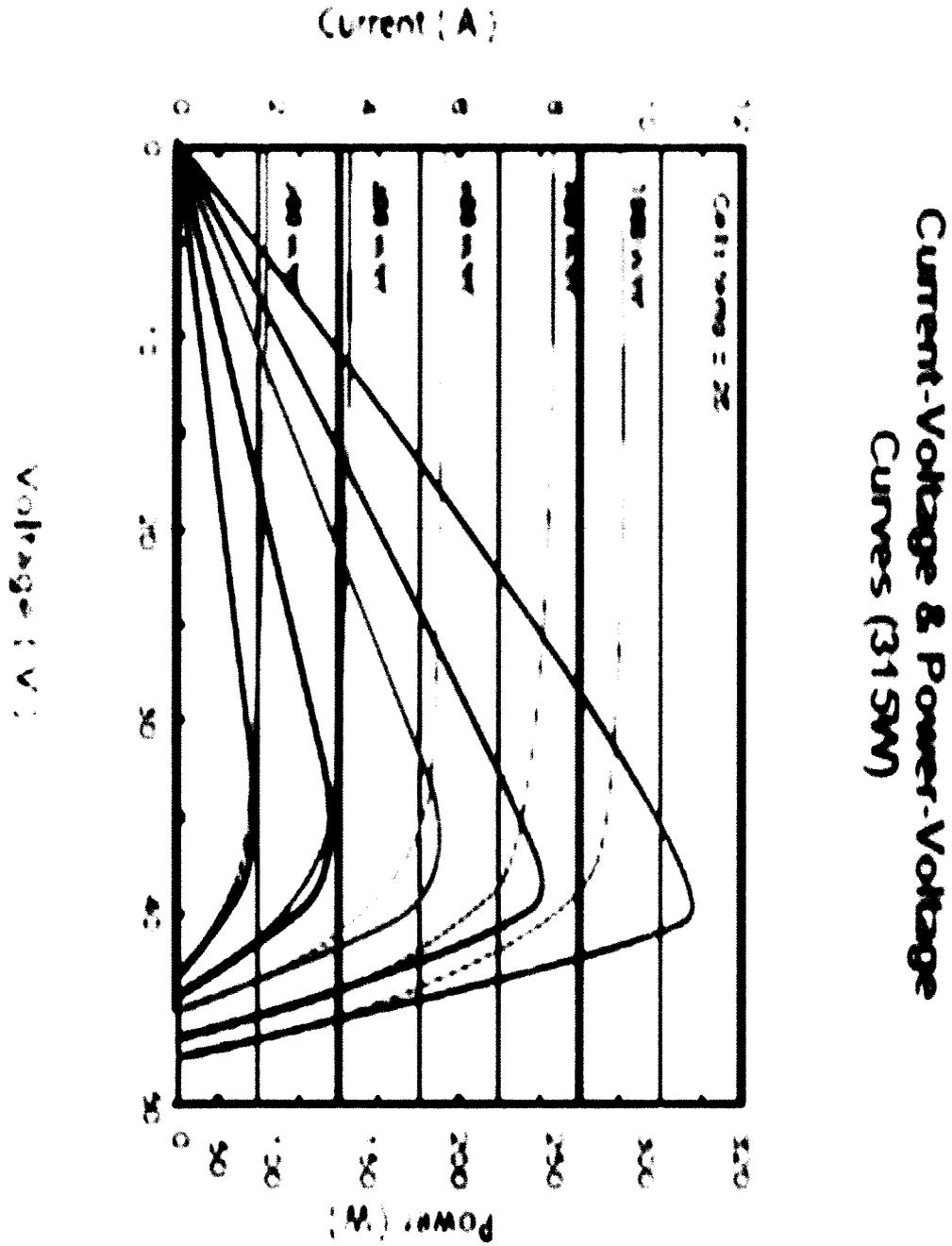
(ix).	Inverter rated AC power [kW]	40
(x).	Total rated power PDC [MWp]	50.0
(xi).	Total rated power PAC[MW]	40.0
(xii).	Ratio PDC/ PAC	1.25
(xiii).	Plant availability area [ha]	103
(xiv).	Plant area ratio [ha/MWp]	2.05

(D). Other Details

(i).	COD of the Generation Facility/Solar Power Plant/Solar Farm (Anticipated)	June 30, 2020
(ii).	Expected Useful Life of the Generation Facility/ Solar Power Plant/Solar Farm from the COD	25 Years



**V-I Curve of PV Solar Cell of the
Generation Facility/Solar Power Plant/
Solar Farm**



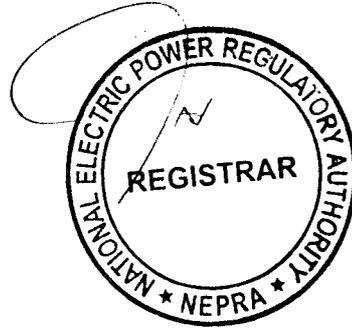
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SCHEDULE-II

The Total Installed Gross ISO Capacity of the Generation Facility/Power Plant/Solar Plant (MW), Total Annual Full Load (Hours), Average Sun Availability, Total Gross Generation of the Generation Facility/Solar Farm (in kWh), Annual Energy Generation (25 years Equivalent Net Annual Production-AEP) KWh and Net Capacity Factor of the Generation Facility/Power Plant/Solar Farm of Licensee is given in this Schedule.



SCHEDULE-II

(1).	Total PV Installed Capacity of Generation Facility	≈ 50.00 MWP
(2).	Average Sun Hour Availability/Day (Irradiation on Inclined Surface)	8 Hours
(3).	Days per Year	365
(4).	PV Plant Generating Capacity Annually (As Per Simulation)	85,626 MWh
(5).	Expected Total Generation in 25 years Life Span	2,140,650 MWh
(6).	Generation per Year from plant keeping 24 Hours Working	$50 \times 24 \times 365 = 438,000\text{MWh}$
(7).	Net Capacity Factor (4/6)	19.55% at P50

Note

All the above figures are indicative as provided by the Licensee. The Net Delivered Energy available to Power Purchaser for dispatch will be determined through procedures contained in the Energy Purchase Agreement (EPA) or the Applicable Document(s).

