

### National Electric Power Regulatory Authority Islamic Republic of Pakistan

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No. NEPRA/R/DL/LAG-437/26982-988

December 10, 2019

Mr. Mujtaba Haider Khan,

Chief Executive Officer, Grid Edge (Private) Limited, 3<sup>rd</sup> Floor, Dawood Centre, MT Khan Road, Karachi.

Contact No. 021-35632200

Subject: Grant of Generation Licence No. SGC/130/2019

Licence Application No. LAG-437 Grid Edge (Private) Limited (GEPL)

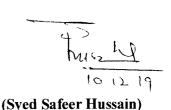
Reference: GEPL's application vide letter dated September 09, 2018 (received on September 14, 2018)

Enclosed please find herewith Generation Licence No. SGC/130/2019 granted by National Electric Power Regulatory Authority (NEPRA) to Grid Edge (Private) Limited (GEPL) for its 02.00 MW Solar Power Plant located at Procter & Gamble (Private) Limited, Eastern Zone Bin Qasim Town, Karachi, in the Sindh, pursuant to Section 14B of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997/Amendment Act, 2018. Further, the determination of the Authority in the subject matter is also attached.

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

Enclosure: Generation Licence (SGC/130/2019)





#### Copy to:

- 1. Secretary, Ministry of Energy (Power Division), A-Block, Pak Secretariat, Islamabad.
- 2. Chief Executive Officer, Alternative Energy Development Board (AEDB), 2<sup>nd</sup> Floor, OPF Building, G-5/2, Islamabad
- 3. Chief Executive Officer, NTDC, 414-WAPDA House, Lahore.
- 4. Chief Executive Officer, CPPA-G, ENERCON Building, Sector G-5/2, Islamabad.
- 5. Chief Executive Officer, K Electric (KEL), KE House, 39 B, Main Sunset Boulevard, DHA, Phase-II, Karachi
- 6. Director General, Environment Protection Department, Government of Sindh, Complex Plot No. ST-2/1, Korangi Industrial Area, Karachi.

# National Electric Power Regulatory Authority (NEPRA)

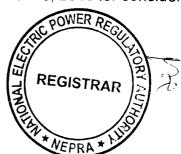
#### <u>Determination of the Authority</u> <u>in the Matter of Application of Grid Edge (Private) Limited</u> <u>for Grant of the Generation Licence</u>

December 10, 2019 Case No. LAG-437

### (A). Filing of Application

- (i). Grid Edge (Private) Limited (GEPL) submitted an application on September 14, 2018 for the grant of generation licence in terms of Section-14B of the 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 above application envisaged setting up an approximately 2.00 MW Photo Voltaic (PV) based generation facility/Solar Power Plant/Solar Farm within the premises of Procter and Gamble Pakistan (Private) Limited (P&G), located at Eastern Zone Bin Qasim Town, Karachi, in the province of Sindh and supplying the generated electric power to P&G as a Bulk Power Consumer (BPC).
- (iii). The Registrar examined the submitted application and found the same was deficient in terms of the Licensing Regulations. Accordingly, the Registrar directed GEPL for submitting the missing information/documents as required under the said regulations. GEPL completed the submission of missing information/documentation by October 16, 2018. 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 December 10, 2018 for consideration of the





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grant of the generation licence as stipulated in Regulation-7 of the Licensing Regulations. The Authority also approved an advertisement to invite comments of general public, interested and affected persons in the matter as stipulated in Regulation-8 of the Licensing Regulations. Subsequently, notices were published in one (01) Urdu and one (01) English newspaper on December 12, 2018.

(iv). In addition to the above, the Authority approved a list of stakeholders seeking their comments for its assistance 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 December 12, 2018, soliciting their comments for assistance of the Authority.

#### (B). Comments of Stakeholders

- (i). In reply to the above, the Authority received comments from three (03) different stakeholders. These included K-Electric Limited (KEL), Alternative Energy Development Board (AEDB) and Central Power Purchasing Agency (Guarantee) Limited (CPPA-G). The salient points of the comments offered by the said stakeholder are summarized below: -
  - (a). KEL objected to the grant of generation licence to GEPL on the premise that the geographical location of the proposed service area of GEPL is Port Qasim, Karachi which falls entirely within its exclusive Service Territory pursuant to Articles-3 & 7 of its Distribution License No. 09/DL/2003 dated July 21, 2003. Therefore, no other entity can distribute/make sale of electric power in the Service Territory of KEL and hence the application of GEPL is ineligible, void ab-initio and cannot be admitted/processed. Further, no generation licence can be granted without holding a public hearing in the matter, otherwise it would be in violation of rights of KEL for which rights are reserved to impugn the same. Furthermore, KEL has already challenged the



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Authority Proposed Modification (APM) initiated to do away with its exclusivity, in the Honorable High Court of Sindh and the Honorable Court vide its order dated December 11, 2018 has suspended the operation of the impugned letter and therefore any further proceedings attempting to modify or change the Distribution License of KEL shall amount to violation of the said Order of the Honorable High Court of Sindh. The proceedings regarding grant of generation licence to GEPL (along with permission to sell power) will be in violation of the order of the Honorable Court as such permission to sell cannot be granted without modification of exclusive Distribution License of KEL. Therefore, the Authority cannot separately through the award of Generation License allow GEPL to make sales of electricity to consumers within the exclusive Service Territory of KEL. Besides, KEL requested the Authority to reject the application of and not to allow GEPL to engage in the sales of electricity within the exclusive service territory of KEL. Otherwise, KEL reserves the right to impugn any such proceedings before the appropriate judicial forum;

- **(b).** AEDB in its comments supported the grant of generation licence to GEPL; and
- c). CPPA-G stated that the grant of generation licence to the subject project is subject to the fulfillment of the prerequisites provided under the applicable legal and regulatory framework. This includes, *inter alia*, the formulation of the demand forecasting Indicative Generation Capacity Expansion Plan (IGCEP), the approval of the Acquisition Program and subsequent procurement pursuant to the specified policy framework/security package. Regarding the



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grant of a generation licence by Authority under Regulation-3(3) of the NEPRA Interim Power Procurement Regulations, 2005 (IPPR-2005), the IPPR-2005, inter alia, states that the power acquisition to be filed by or on behalf of distribution company shall provide information in respect of "the particular distribution company's demand which is going to be met through the proposed procurement". Subsequent thereto, CPPA-G will be required to issue Power Acquisition Request (PAR) which requires due consideration of the demand against which the procurement is to take place. It is pertinent to add here that NEPRA, in the State of Industry Report, 2017 (SIR-2017) has provided the power balance for the NTDC system for each year up to the year 2025. It is evident that the procurement of power in each year, without rationalization with the demand projections, will yield a surplus of power by the year 2025 which carries significant financial implications for the end consumer. Furthermore, it is pertinent to mention that all future renewable energy will come through competitive bidding and Grid Code Review Panel (GCRP) has strongly recommended the share of 5%of the total installed capacity for solar power generation, to NEPRA. Additionally, it must be noted that the project sponsor has not identified any primary power purchaser but has, instead, stated that it intends to sell the "surplus" power generated from its generation facility to Procter and Gamble Pakistan (Private) Limited (P&G) for its factory located at Port Qasim, Karachi.

(ii). The Authority considered the above comments of the stakeholders and in view of the observations raised by KEL and CPPA-G, considered it appropriate seeking the perspective of GEPL in the matter. On the observations







of KEL, the company/GEPL submitted that the main contention of KEL is that it has an "exclusive" licence therefore, no other entity can make sale of electricity. It may be noted that GEPL has not applied for a distribution licence therefore, the objection of KEL is baseless and without merit. The application is for a generation licence and for an authorization for supplying to a Bulk Power Consumer (BPC) for which KEL does not possess any such privilege. GEPL clarified that the proposed Photo Voltaic (PV) based generation facility will be set up on a private property and will be connected by laying feeder/underground cable directly connecting the BPC. Further, the said feeder/underground cable will be operated by the BPC and the arrangement does not fall within the purview of distribution. In terms of the NEPRA Licensing (Generation) Rules, 2000 (the "Generation Rules"), it is prerogative of the Authority to hold a public hearing or not. The facts about the application had already been published in the press which gave the stakeholders the opportunity to provide their comments and through its submissions, KEL has provided its comments. As KEL has submitted its comments therefore, the assertions that its rights have been violated is not true. About the APM to do away with the exclusivity, GEPL is not party to such any proceedings and therefore, no comments can be offered.

(iii). On the observations of CPPA-G, it was clarified that GEPL does not intend to sell power to any distribution company and is seeking the Generation Licence to sell energy through onsite installation at the site of P&G/BPC through a cable/feeder on its own private property. The comments of CPPA-G seems to arise from confusion regarding the application however, the arrangement envisaged is a B2B customer without the involvement of any government department/function and the private market is already based on competitiveness owing to its very nature. There is only one off-taker i.e. P&G which will consume all the electric power generated, hence there will be no surplus power nor is there any intention to sell surplus power to any other party, therefore, the observations of CPPAG are not relevant.

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(iv). The Authority considered the above submissions of GEPL and considered it appropriate to proceed further in the matter of the application of GEPL for the consideration of grant of Generation Licence as stipulated in the Licensing Regulations and the Generation Rules.

### (C). <u>Evaluations/Findings</u>

- (i). The Authority examined the submissions of GEPL including the information provided with its application for the grant of Generation Licence, the comments of the stakeholders, rejoinder submitted by GEPL, the relevant rules & regulations in the matter.
- (ii). The Authority has observed that the applicant i.e. GEPL is an entity incorporated under Section 16 of the Companies Act, 2017 (XIX of 2017), having Corporate Universal Identification No. 0122474, dated August 08, 2018 complying with the provisions of Section-24 of the NEPRA Act. Further, it has also been observed that GEPL is a private limited company with the principal line of business to generate, accumulate, transmit, distribute, purchase, sell and supply electric power or any other energy and power generated by any source i.e. conventional or non-conventional resources.
- (iii). The Authority has duly considered the provisions of the Memorandum of Association and Articles of Association of the company and has observed that the applicant company i.e. GEPL has been incorporated jointly by Reon Energy Limited (REL) and ENI International B.V. (ENIIBV) having equity contribution in the proportion of 60:40 specifically to operate in the Renewable Energy (RE) Sector of Pakistan. REL is a wholly owned subsidiary of Dawood Lawrencepur limited which is RE arm of Dawood Group looking after the solar energy business for the Group. REL is the largest solar national leading EPC (Engineering, Procurement and Construction) solution providers in Pakistan. These solutions include designing of system, procurement of material from





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distinct manufacturers and construction of complete PV System (on-grid and hybrid) to deliver cost effective & trustworthy solutions.

- REL has delivered projects at various locations for different industrial consumers having sizing of 1.00 MW and above including Service Industries, Kohinoor Textiles and Nobel Energy- a part of the Wah Nobel Group. REL with an installed distributed captive capacity of over 10.00MW in the Chemical & Industrial sector with further 15.00 MW underway, is now recognized as the leader in high quality installations whilst providing customers with clean energy and minimizing their energy price risk. The company has successfully obtained ISO 14001 Certification. As explained above, the other equity holder of the applicant company is ENIIBV which is a company of Eni S.p.A. (ENI) is the ultimate shareholder of ENIIBV. It has been noted that ENI is one of the world's largest integrated energy company, operating in more than seventy (70) countries worldwide and employing around 33,000 employees. It has also been noted that as of March 31, 2018, the market capitalization of the parent company was calculated at US \$ 64.00 billion. In terms of the said revenue, the parent company has been consistently ranked among the top 150 companies in the Fortune Global 500 list. ENI is not only engaged in oil and natural gas exploration, field development and production, but also in the supply, trading and shipping of natural gas, LNG, electricity and fuels, and operates across the entire energy chain (including Renewable Energy). ENI places about 25 TWh of production on the Italian market each year with bilateral sales and sales in the energy market. ENI is the second largest producer of electricity in Italy with a share of 9% of Italian electricity production. ENI is working closely with all the stakeholders towards improving access to energy in the countries where it operates and making maximum effort to reduce direct emissions of CO<sub>2</sub>.
- (v). The Authority has observed that ENI has identified different RE projects, both solar and wind in countries of strategic interest where it already operates in Italy as well as abroad. In Italy, ENI has around thirteen (13) PV plants in operation of a total capacity 35.00MW and other RE projects under





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development and construction for about additional 60.00 MW. Abroad, ENI is developing a 50MW wind project in Kazakhstan, currently in construction phase, and a 10.00 MW solar project in Algeria that achieved start up in 2018. In order to further strengthen the presence of ENI, a number of cooperation/framework agreements have been executed in Australia, Ghana, Angola, Algeria, Tunisia and Egypt which will expand the sphere of activities in the field of RE. In consideration of the said, the Authority considers that the sponsors have very strong technical and financial capabilities to develop RE projects based on solar and wind.

- (vi). The Authority has observed that GEPL carried out a feasibility study of the project including, *inter alia*, proposed equipment for the PV generation facility/solar power plant/solar farm, soil tests reports, technical details pertaining to selection of PV solar panels, invertor and other allied equipment, environmental study and project financing etc. According to the feasibility study, the project company/GEPL will be setting up a PV based generation facility/solar power plant/solar farm to the tune of 2.00 MW<sub>P</sub> to be located at Eastern Zone Bin Qasim Town, Karachi in the province of Sindh. In this regard, the proposed generation facility/solar power plant/ solar farm will be requiring about 7.00 acres of land which will be provided by the P&G under the project implementation arrangement entered with GEPL.
- (vii). As explained above, the company i.e. GEPL pursuing a generation Licence, has been incorporated to operate in the RE sector of the country and first project being undertaken is setting up a PV solar based generation facility of 2.00 MW<sub>P</sub> for providing the generated electricity to the P&G. It is observed that currently P&G is a consumer of KEL however, with the setting up of the proposed PV based generation facility, it will be supplied partially through solar based electric power. The proposed arrangement will result in reduction in the consumption from the utility which will result in lowering the cost of production. Also the proposed arrangement will result in reducing emissions of CO<sub>2</sub> to the atmosphere thus benefitting to the environment. According to the submitted





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information, the total cost of the project will be approximately PKR 168.129 Million. Out of which 75% (PKR 126.097 Million) will be the debt and 25% (PKR 42.032 Million) will be equity. The debt portion of the project will be arranged through local financing for which a number of banks (MCB and JS Bank) have shown their interest.

(viii). The Authority has observed that the sponsors have carried out a feasibility study of the project including, *inter alia*, selection of the PV solar panels for the proposed generation facility and other allied equipment, project layout arrangement, power production estimates based on solar irradiation data of the project site, etc. The review of the feasibility study reveals that for the proposed approximately 2.00 MW<sub>P</sub> generation facility/solar power plant/ solar farm the company will be installing 6060 PV cells each of 330 Watt. In consideration of the said, the project company/GEPL has submitted that PV cells/panels of Golden Concord Group (GCL) China have been selected for the project.

It is pertinent to mention that GCL is an international energy conglomerate specializing in clean and sustainable energy. The Group, founded in 1990, now employs 30,000 people worldwide with business footprints across 31 provinces, municipalities and autonomous regions of mainland China, Hong Kong, Taiwan, as well as Africa, North America, Southeast Asia and Europe. GCL was ranked third in the world's new energy Top 500 in the year 2017. Currently, GCL has operations all over the world and has five module production bases in mainland China and one in Vietnam, with production capacity of 6.00GW, and an additional 2.00 GW of high-efficiency battery capacity, making it a world-class module producer. GCL offers a wide range of high-quality products for a variety of application environments, including modules of standard 60/72-piece, dualglass, high-efficiency polysilicon PERC, and half-cell etc. All products underwent the most rigorous quality inspection and testing. GCL S.I. is rated as a global firsttier module supplier by Bloomberg ranking among the top six globally for three consecutive years. With a vertically integrated value chain operation, GCL has proven track record of capability and expertise in delivering state-of-the-art solar

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package solutions incorporating Design-Product-Service. The selected PV cells and other allied equipment will result in capacity factor of about 17.90% supplying more than 3.17 million units (kWh) annually of green and energy to P&G.

- (x). As explained above, GEPL will be supplying the generated electric power from its proposed PV based generation facility/solar power plant/solar farm only to P&G as Bulk Power Consumer (BPC) as stipulated in Section-22 of the NEPRA Act. According to the system study of the project, the dispersal to the BPC will be made at 11 kV voltage through underground cables/feeders located on private property owned by the BPC itself without involving any public or third party. It is confirmed that GEPL has completed the Initial Environmental Examination (IEE) for the project and Environmental Protection Agency, Government of Sindh (EPAGoS), has also issued the No Objection Certificate (NOC) for the project.
- (xi). The grant of a generation licence is governed by the provisions of Rule-3 of the Generation Rules. The Authority has observed that GEPL has provided the details of the proposed generation facility about (a). location; (b). size; (c). technology; (d). interconnection arrangement; (e). technical limits; (f). technical functional specification and (g). other specific/relevant details as stipulated in Rule-3 (1) of the Generation Rules. According to the Rule-3(5) of the Generation Rules, the Authority may refuse to issue a generation licence where the site, technology, design, fuel, tariff or other relevant matters pertaining to the proposed generation facility/solar power plant/ solar farm 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 stipulates the conditions pertaining to Least Cost Option Criteria which includes (a), sustainable development or optimum utilization of the RE or non-RE 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/solar power plant/ solar farm against the preferences POWER REG



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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/generation facility/solar power plant/solar farm 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/solar power plant/solar farm; 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.

(xii). In view of the above, the Authority considers that the proposed project will result in optimum utilization of the RE which was earlier untapped, resulting in pollution free electric power. It is pertinent to mention that solar is an indigenous resource and such resources should be given preference for the energy security. As explained in the preceding paragraphs above, the company will be supplying electric power to a BPC directly which only involve laying a feeder measuring about 200 meter in length, this concludes that the project will not face any constraints in transmission of electric power. Further, being located in the same vicinity as that of the BPC, the project will not result in cost and right-of-way issue for the provision of interconnection facilities. In view of the said, the Authority considers that the project of GEPL fulfills the eligibility criteria for grant of generation licence as stipulated in the NEPRA Act, rules and regulations and other applicable documents.

#### (D). Grant of Licence

(i). The Authority considers that 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, the Authority is of the considered opinion that for sustainable





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development, all indigenous power generation resources especially RE must be developed on priority basis.

- (ii). The Authority observes that the existing energy mix of the country is heavily skewed towards the thermal power plants, mainly operating on imported fossil fuels. The continuous import of fossil fuels 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 power generation and their development is encouraged. The Authority is really encouraged to observe that with each passing day, the cost of RE technologies is showing downward trend making the same affordable for commercial use. The Authority is also encouraged to observe that the Govt. of Pakistan is planning to enhance the share of RE from its current level of 5% of the Installed capacity to 30% of the total installed capacity by 2030. Furthermore, a number of initiatives are also being undertaken in the private sector in this regard.
- (iii). The Authority has observed that in the current case, GEPL has approached for the grant of a Generation Licence for setting up a PV based generation facility of 2.00 MWP for supplying to P&G as a BPC which is currently being supplied by KEL. The Authority considers that the above proposal of GEPL is in line with the provisions of the NEPRA Act, relevant rules and regulations framed thereunder and vision of the Govt. of Pakistan to enhance the contribution of RE in generation of electric power. The project will not only help GEPL in diversifying its portfolio but will also enhance its energy security. Further, the project will also help in reducing the carbon emission by generating clean electricity, thus improving the environment.
- (iv). As explained above, GEPL has provided the details of location, technology, size, net capacity/energy yield, interconnection arrangements, technical details and other related information for the proposed PV based generation facility/solar power plant/ solar farm. In this regard, the Authority has





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observed that sponsors of the project have acquired/available with them approximately seven (07) acres of land for setting up the generation facility/solar power plant/solar farm. The said details are being incorporated in the generation licence. In this regard, the Authority directs GEPL to utilize the aforementioned land for the exclusive purpose of setting up the proposed generation facility/solar power plant/solar farm and not to change its use except with its prior approval.

- (v). The Authority has observed that proposed generation facility/solar power plant/ solar farm of GEPL will be used for supplying to P&G as a BPC. According to Section-2(ii) of the NEPRA Act, a consumer which purchases or receives electric power at one premises, in an amount of one megawatt or more or in such amount and voltage level and with such characteristics as the Authority may determine/specify is treated as BPC. In view of said explanation, the Authority considers that P&G qualifies to be considered as BPC under the NEPRA Act and accordingly the Authority declares P&G a BPC of GEPL.
- (vi). Regarding supply to the BPC, the Authority observes that both P&G/BPC and GEPL are located within the same premises. Further, BPC will be supplied through one (01) underground cable/feeder of 11 kV voltage (measuring about 100-200 meters) not involving any public or third party property. Pursuant to proviso to Section-21 of the NEPRA Act, the Authority is empowered to allow a generation company to sell electric power to a BPC located in the service territory of a distribution company. In view of the said, the Authority allows the GEPL to sell electricity to P&G. Further, under Section-2(v) of the NEPRA Act, ownership, operation, management and control of distribution facilities located on private property and used solely to move or deliver electric power to the person owning, operating, managing and controlling those facilities or to tenants thereof has not been included in the definition of "distribution". Based on the said considerations that the proposed BPC in the name of P&G is located within the same premises and no public area is involved, the supply of power to P&G by GEPL does not constitute a distribution activity under the NEPRA Act, and GEPL will not require a distribution licence for supplying to P&G/BPC POWER REGU

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- (vii). The term of a generation licence under Rule-5(1) of the Generation Rules is required to match with the maximum expected useful life of the units comprised in a generating facility. According to the information provided by GEPL, the COD of the proposed generation facility/solar power plant/ solar farm will be June 30, 2020 and it will have a useful life of around twenty five (25) years from its COD. In this regard, GEPL has requested that the term of the proposed generation licence may be fixed as per the said useful life of generation facility/solar power plant/ solar farm. The Authority considers that said submission of GEPL about the useful life of the generation facility/solar power plant/ solar farm and the subsequent request of GEPL to fix the term of the generation licence is consistent with international benchmarks; therefore, the Authority fixes the term of the generation licence to twenty five (25) years from COD of the project.
- (viii). Regarding compliance with the environmental standards as stated above, GEPL has obtained the NOC from EPAGoS and has confirmed that 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 separate article in the generation licence along with other terms and conditions making it obligatory for GEPL to comply with relevant environmental standards at all times. Further, the Authority directs GEPL to submit a report on a 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.
- (ix). The proposed generation facility/solar power plant/ solar farm of GEPL 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. GEPL has informed that the project will achieve COD by June 30, 2025 which is within the deadline of the Kyoto Protocol. In view of the said, a specific article for carbon credits and its sharing with the power purchaser/BPC



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has been included in the generation licence. Foregoing in view, the Authority directs GEPL to initiate the process in this regard at the earliest so that proceeds for the carbon credits are materialized. GEPL will be required to share the proceeds of the carbon credits with the power purchaser/BPC as stipulated in the generation licence.

- (x). Regarding the rates, charges and terms and conditions of tariff between GEPL and P&G, it is reiterated that under Section-7(3)(a) of the NEPRA Act, determining tariff, rate and charges etc. is the sole prerogative of the Authority. However, the Authority observes that tariff between GEPL and its BPC (i.e. P&G), does not affect any other consumer or third party. Therefore for the purpose of tariff, the Authority considers it appropriate directing GEPL and P&G to agree on a bilateral agreement and accordingly GEPL will be allowed to charge the agreed tariff subsequent to the grant of the generation licence.
- (xi). The Authority as duly considered the comments of different stakeholders as explained above. In this regard, the Authority has observed that KEL has raised various points including (a). that the geographical location of the proposed service area of GEPL is falls entirely within its exclusive Service Territory; (b). generation licence cannot be granted without holding a public hearing; (c). it has already challenged the APM initiated to do away with its exclusivity; and (d). the proceedings regarding grant of generation licence to GEPL and allowing sale to will be in violation of the orders of the court. In consideration to the above, the Authority hereby clarifies that GEPL has requested for the grant of Generation Licence under Section-14 B of the NEPRA Act and for supplying to a BPC as stipulated under Section-22 of the NEPRA Act. Under the said provision, the Authority is fully authorized allowing the sale of electric power to bulk power consumers located in the service territory of the holder of a licence. In this regard, reference is made to Article 7 of granted distribution licence of KEL which clearly acknowledges that the exclusive licence granted to KEL subject to provision of Section 22 of the NEPRA Act. About the observation of KEL that the generation licence cannot be granted without a public



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hearing. In this regard, the Authority clarifies that the specific provision about holding a hearing in the case of grant a generation licence is stipulated in Rule 3(4) of the Generation Rules and the same is not of a directive nature at all. About the initiated proceedings for APM to exclude exclusivity from the distribution licence of KEL, it is confirmed that the same are sub-judice in the high court of Sindh and as directed by the court, the Authority has suspended the proceedings of the same and has not taken adverse action in the matter. However, the processing of the application of GEPL for the grant of generation licence under Section-14B and authorization for supplying to a BPC under Section-22 of the NEPRA Act cannot be considered at all any violation of the orders of the High court of Sindh in the case of APM for modification of distribution licence of KEL and the two cases cannot be mixed up.

(xii). Regarding the observations of CPPA-G, the Authority has observed that different points has been raised including (a). grant of generation licence to GEPL is subject to the fulfillment of the prerequisites provided the applicable legal and regulatory framework; (b). the formulation of the demand forecasting IGCEP and approval of the Acquisition Program and subsequent procurement pursuant to the specified policy framework/security package; and (c). that all future RE will come through competitive bidding etc. In consideration of the said, the Authority observes that the observations raised by CPPA-G are meant for those projects which are supposed to be developed for supplying to national grid under a certain policy incentive which is not in the case under consideration. Actually, GEPL is seeking a generation licence for setting up a generation facility for supplying to P&G as BPC. As explained in the preceding paragraphs, the proposal is strictly legitimate and is allowed the existing regulatory regime therefore, the comments of CPPA-G are not relevant.



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(xiii). In view of the above, the Authority hereby approves the grant of generation licence to GEPL 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.

#### **Authority:**

Rafique Ahmed Shaikh (Member)

Rehmatullah Baloch (Member)

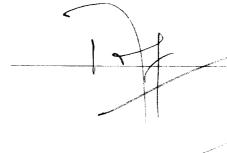
Saif Ullah Chattha (Member)

Engr. Bahadur Shah (Member/Vice Chairman)

Engr. Tauseef H. Farooqi (Chairman)

Did not Attend







# National Electric Power Regulatory Authority (NEPRA)

#### Islamabad - Pakistan

# Mo. SGC/130/2019

In exercise of the powers conferred upon the National Electric Power Regulatory Authority (NEPRA) under Section-14(B) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, as amended or replaced from time to time, the Authority hereby grants a Generation Licence to:

#### **GRID EDGE (PRIVATE) LIMITED**

Incorporated under Section-16
of the Companies Act, 2017 (XIX of 2017) having Corporate Universal Identification No. 0122474, dated August 08, 2018

for its Generation Facility/Solar Power Plant/Solar Farm
Located at Procter & Gamble (Pvt.) Limited, Eastern Zone Bin
Qasim Town, Karachi in the Province of Sindh

(Installed Capacity: 02.00 MW<sub>P</sub> Gross ISO)

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

Given under my hand on <u>10<sup>th</sup></u> day of <u>December Two Thousand & Nineteen</u> and expires on <u>29<sup>th</sup></u> day of <u>June Two Thousand & Forty-</u>

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## 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). "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;
- (c). "Applicable Law" means all the Applicable Documents;
- (d). "Authority" means the National Electric Power Regulatory
  Authority constituted under Section-3 of the Act;
- (e). "Bulk Power Consumer (BPC)" means a consumer which purchases or receives electric power, at one premises, in an amount of one (01) megawatt or more or in such other amount and voltage level and with such other characteristics as the Authority may specify and the Authority may specify different amounts and voltage levels and with such other characteristics for different areas:
  - "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

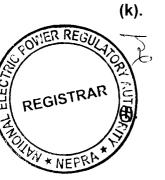




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supplying to the Power Purchaser;

- (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). "Commissioned" means the successful completion of commissioning of the generation facility/Solar Power Plant/Solar Farm for continuous operation and despatch to the Power Purchaser;



"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;

"Generation Rules" mean the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000 as amended or replaced from time to time;

(m). "Grid Code" means the grid code prepared and revised from time



Generation Licence Grid Edge (Private) Limited Eastern Zone Bin Qasim Town, Karachi in the Province of Sindh

to time by NTDC with necessary approval of the Authority;

- (n). "IEC" means "the International Electrotechnical Commission or its successors or permitted assigns;
- (o). "IEEE" means the Institute of Electrical and Electronics Engineers or its successors or permitted assigns;
- (p). "Law" means the Act, relevant rules and regulations made there under and all the Applicable Documents;
- (q). "Licence" means this licence granted to the Licensee for its generation facility/Solar Power Plant/Solar Farm;
- **(r).** "Licensee" means <u>Grid Edge (Private) Limited</u> or its successors or permitted assigns;
- (s). "Licensing Regulations" mean the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999 as amended or replaced from time to time:
- (t). "Net Delivered Energy" means the net electric energy expressed in kWh that is generated by the generation facility/Solar Power Plant/Solar Farm of the Licensee at its outgoing Bus Bar and delivered to the Power Purchaser:
- (u). "Power Purchaser" means the BPC which will be purchasing electric power from the Licensee, pursuant to a PPA for procurement of electric power;



"Power Purchase Agreement-PPA" 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



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time to time;

- (w). "Solar Farm" means "a cluster of photovoltaic cells in the same location used for production of electric power";
- (x). "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 rules and regulations issued under the Act.

## Article-2 Applicability of Law

This Licence is issued subject to the provisions of the Applicable Law, as amended or replaced 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, subject to the provisions of Section-14(B) of the Act.

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5 of 8 of the Articles of Generation Licence **4.2** Unless suspended or revoked earlier, the Licensee may apply for renewal of this Licence ninety (90) days prior to the expiry of the above term, as stipulated in the Generation Rules read with 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 is allowed to charge the Power Purchaser/BPC a mutually agreed tariff.

## 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.

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## 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 as amended or replaced 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 as amended or replaced from time to time.

## Article-11 Power off take Point and Voltage

The Licensee shall deliver the electric power to the Power Purchaser at the outgoing Bus Bar of its generation facility/Solar Power Plant/Solar Farm.

ER REGULA Licensee shall be responsible for the up-gradation (step up) of generation

voltage up to the required dispersal voltage level.

# Article-12 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.

#### <u>Article-14</u> 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 on mutually agreed terms and conditions.

## 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.

# 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

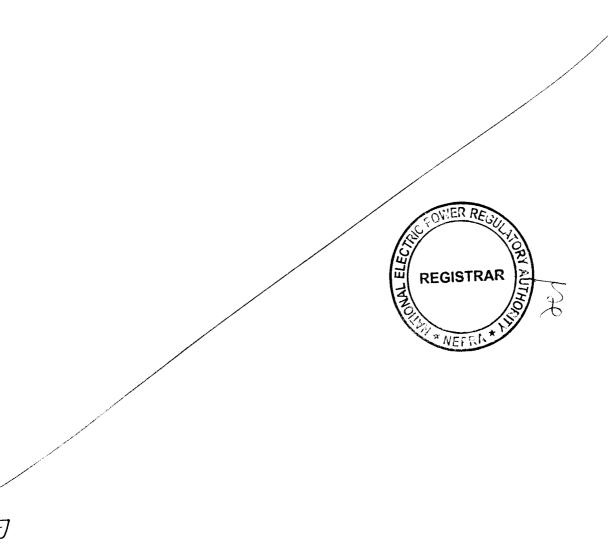
The Licensee shall comply with the provisions of the Applicable Law, guidelines, directions and prohibitory orders of the Authority as issued from time to time.





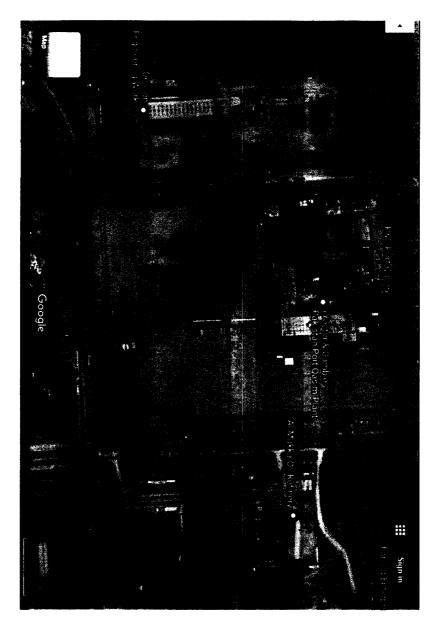
### **SCHEDULE-I**

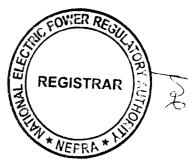
The Location, Size (i.e. Capacity in MW),
Type of Technology, Interconnection Arrangements, and Technical
Limits, Technical/Functional Specifications and other details
specific to the Generation Facilities of the Licensee are described
in this Schedule.





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









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

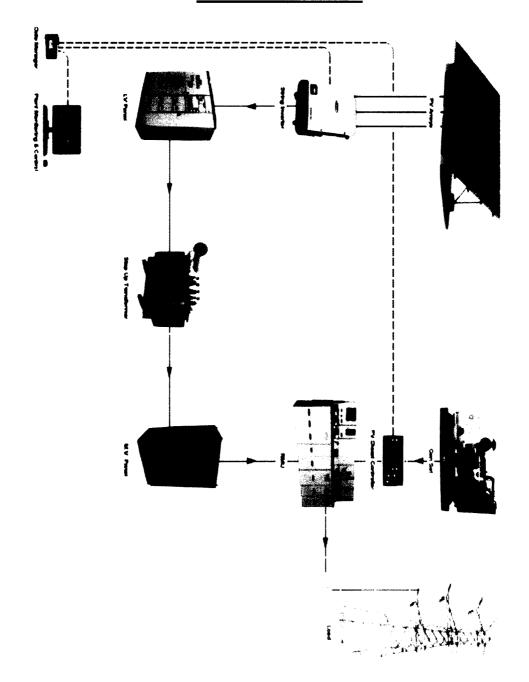
Sr. No.	<u>Latitu<b>de</b></u>	Longitude
Boundary 1	24°48'01.8"N	67°24'01.6"E
Boundary 2	24°48'05.5"N	67°24'01.3"E
Boundary 3	24°48'05.6"N	67°24'08.6"E
Boundary 4	24°48'05.6"N	67°24'08.6"E







### <u>Process Flow Diagram</u> of the Generation Facility/Solar Power Plant/Solar Farm of the Licensees

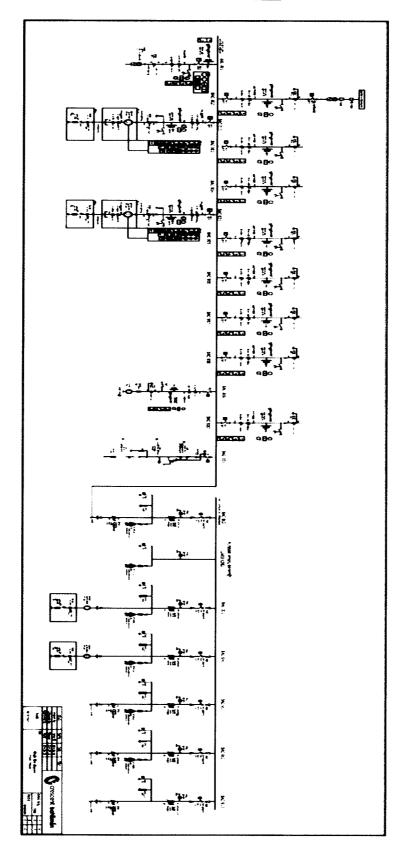








# Single Line Diagram of the Generation Facility/Solar Power Plant/Solar Farm of the Licensee





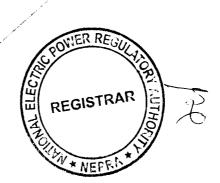




# Interconnection Arrangement/Transmission Facilities for Dispersal of Power from the Generation Facility/Solar Power Plant/Solar Farm of the Licensee

The electric power generated from the generation facility/Solar Power Plant/Solar Farm of the Licensee/Grid Edge (Pvt.) Limited (GEPL) will be delivered/supplied to a Bulk Power Consumer (BPC) in the name of Procter and Gamble Pak (Pvt.) Limited (P&G) located near Port Qasim, Eastern Zone, Karachi, in the province of Sindh.

(2). The details pertaining to BPC, supply arrangement and other relating information are provided in the subsequent description of this schedule. Any change in the above Interconnection Arrangement/Transmission Facility/supply arrangement duly agreed by Licensee/GEPL and P&G, shall be communicated to the Authority in due course of time.





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# <u>Details of</u> <u>Generation Facility/Solar Power Plant/</u> <u>Solar Farm</u>

#### (A). General Information

(i).	Name of the Company/Licensee	Grid Edge Pvt. Limited
(ii).	Registered/ Business office of the Company/Licensee	3 <sup>rd</sup> Floor, Dawood Center, M.T. Khan Road, Karachi in the Province of Sindh
(iii).	Location of the generation facility Solar Power Plant/ Solar Farm	P&G Port Qasim Plant
(iv).	Type of the generation facility/ Solar Power Plant/ Solar Farm	Solar Photovoltaic (PV)

#### (B). Solar Power Generation Technology & Capacity

(i).	Type of Technology	Photovoltaic (PV) Cell
(ii).	System Type	ON-GRID
(iii).	Installed Capacity of the generation facility Solar Power Plant/ Solar Farm (MW)	≈ 2.00 MW

#### (C). <u>Technical Details of Equipment</u>

(a).	Solar Panels – PV Modules		
(i).	Type of Module	Polycrystalline Silicon Solar Modules 330W	
(ii).	Type of Cell	Polycrystalline	
(iii).	Dimension of each Module	1956×992×40mm	
(iv).	No. of Panel/Modules	6060 POWER REGILL	



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Page 7 of 13 of the Schedule-I of Generation Licence

		· · · · · · · · · · · · · · · · · · ·	
(v).	Total Module Area	1.940 m2 per module	
(vi).	Frame of Panel	Anodized Aluminium Frame	
(vii).	Weight of one Module	23 kg	
(viii).	No of Solar Cells in each module	72	
(ix).	Efficiency of module	17%	
(x).	Maximum Power (Pmax)	320	
(xi).	Voltage @ Pmax	37.80	
(xii).	Current @ Pmax	8.74	
(xiii).	Open circuit voltage (Voc)	46.20	
(xiv).	Short circuit current (Isc)	9.24	
(xv).	Maximum system open Circuit Voltage	1500 V	
(b).	PV Array		
(i).	Nos. of Strings	303	
(ii).	Modules in a string	20 each	
(c).	<u>Inverters</u>		
(i).	Capacity of each unit	110 kW	
(ii).	Manufacturer	Sungrow SG110CX	
(iii).	Input Operating Voltage Range	200-1100 V	
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(iv).	Number of Inverters	18	
(v).	Efficiency of inverter	98.7%	
(vi).	Max. Allowable Input voltage	1100 V DC	
(vii).	Max. Current	158.8 A	
(viii).	Max. Power Point Tracking Range	550-850 V	
(ix).	Output electrical system	3 phases, 4 wir	res
(x).	Rated Output Voltage	480 V	
(xi).	Power Factor (adjustable)	> 0.99; 0-1 adjustable	
(xii).	Power control	MPP tracker	
(xiii).	Rated Frequency	50/60 Hz	
	Environmental Enclosures	Relative Humidity	0-100%, condensing
(sin)		Audible Noise	68 dB(A) @ 1m
(xiv).		Operating Elevation	4000 m
		Operating temperature	-30 to +60°C
		Α	DC circuit breaker
(xv).	Grid Operating protection	В	AC circuit breaker
	FOWER REGULA	С	DC overload protection (Type 2)
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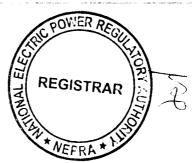


		D	Overheat protection	
		E	Grid monitoring	
		F	Insulation monitoring	
		G	Ground fault monitoring	
(d).	(d). Data Collecting System			
(i).	System Data	Continuous online logging with data logging software to portal.		
(e).	Unit Transformer			
(i).	Rating	2 x 1000 kVA	2 x 1000 kVA	
(ii).	Type of transformer	1000 ONAN	1000 ONAN	
(iii).	Purpose of transformer	Step-up (0.48 / 11kV)		
(iv).	Output Voltage	11 KV		

### (D). Other Details

(i).	Expected COD of the generation facility Solar Power Plant/ Solar Farm	June 30, 2020
(ii).	Expected useful Life of the generation facility Solar Power Plant/ Solar Farm from the COD	25 years

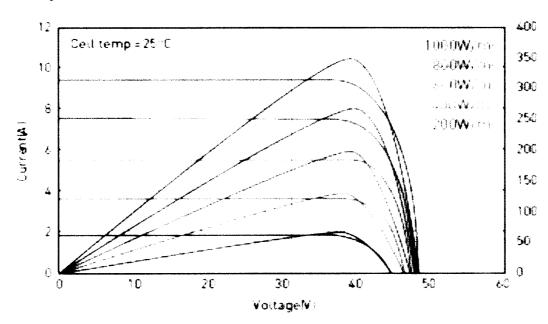




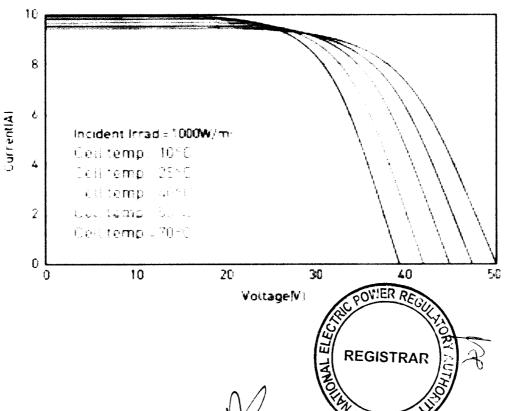


### V-I Curve of Solar Cell of Generation Facility/Solar Power Plant/ Solar Farm

#### U-I/P-U Curve at Different Irradiation (350W)



### U-I Curve at Different Temperature (350W)



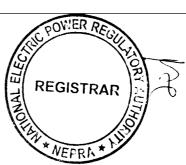


# Information Regarding Bulk Power Consumer(s)/BPC(s) i.e. Procter and Gamble Pakistan (Private) Limited (P&G)

(i).	No. of Consumers		One (01)
(ii).	Location of consumer (distance and/or identity of premises)		P&G Port Qasim Plant, Karachi
(iii).	Contracted Capacity and Load Factor for consumer		2.00 MW/17%
	Spec	ify Whether	
(iv).	(a).	The consumer is an Associate undertaking of the Grid Edge -If yes, specify percentage ownership of equity;	No
	(b).	There are common directorships:	No
	(c).	Either can exercise influence or control over the other.	No
		ify nature of contractual ionship	
(v).	(a).	Between consumer and Grid Edge.	Supplying of Electric Power as per the executed PPA
	(b).	Consumer and DISCO.	P&G is an existing B-3 consumer of K Electric Limited
(vi)	Any other network information deemed relevant for disclosure to or consideration of the Authority.		N/A







# Information Regarding Distribution Network for Supply of Electric Power to BPC in the name of P&G

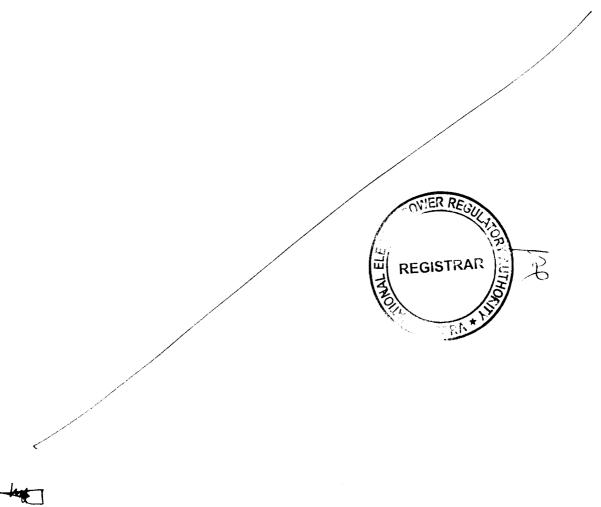
(i).	No. of Feeders	One (01)
(ii).	Length of Each Feeder (Meter)	100 -200 Meter
(iii).	Length of Each Feeder to each Consumer	-do-
(iv).	In respect of all the Feeders, describe the property (streets, farms, Agri land, etc.) through, under or over which they pass right up to the premises of customer, whether they crossover.	The underground cable supplying to P&G/BPC is located on private property owned by P&G/BPC without involving any third property.
	Whether owned by P&G, Consumer or DISCO-(deal with each Feeder Separately)	
(v).	(a). If owned by DISCO, particulars of contractual arrangement	
	(b). Operation and maintenance responsibility for each feeder	operation and management of the
(vi).	Whether connection with network of DISCO exists (whether active or not)- If yes, provide details of connection arrangements (both technical and contractual)	P&G is an existing B-3 consumer of K Electric Limited
(vii).	Any other network information deemed relevant for disclosure to or consideration of the Authority.	NΔ





#### 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/Solar Farm of Licensee are given in this Schedule.





#### SCHEDULE-II

(1).	Total Installed Capacity of the Generation Facility/Solar Power Plant/Solar Farm	2.00 MW <sub>P</sub>
(2).	Average Sun Hour Availability/Day (Irradiation on Inclined Surface)	8 to 8.5 Hours
(3).	No. of days per year	365
(4).	Annual generating capacity of Generation Facility/Solar Power Plant/Solar Farm (As Per Simulation)	3138.6 MWh
(5).	Total expected generation of the Generation Facility/Solar Power Plant/Solar Farm during the twenty five (25) years term of this licence	62772 MWh
(6).	Annual generation of Generation Facility/Solar Power Plant/Solar Farm based on 24 hours working	17520 MWh
(7).	Net Capacity Factor of Generation Facility/Solar Power Plant/Solar Farm	17.90 %

### 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 Power Purchase Agreement (PPA) or the Applicable Document(s).





# Authorization of Authority to Grid Edge (Private) Limited (GEPL)

Incorporated under Section-16 of the Companies Act, 2017 (XIX of 2017) having Corporate Universal Identification No. 0122474, dated August 08, 2018

# GENERATION LICENCE No. SGC/130/2019 For Sale to Bulk Power Consumer(s)

Pursuant to Section-22 of the Act and Rule-7 of the Generation Rules, the Authority hereby authorizes the GEPL/(the Licensee) to engage in Second-Tier Supply business, limited to the consumer(s) as follows:-

(1). Procter and Gamble Pakistan (Private) Limited (P&G) located at Eastern Zone Bin Qasim Town, Karachi in the Province of Sindh.

Engr. Rafique Ahmad Sheikh Rehmatullah Baloch (Member) (Member)

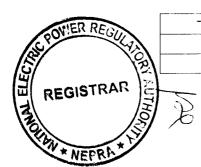
Did Not Attend

Saif Ullah Chattha

(Member)

Engr. Bhadur Shah

(Member)/Vice Chairman



Engr. Tauseef H. Farooqi (Chairman)



