National Electric Power Regulatory Authority
Islamic Republic of Pakistan

Registrar

NEPRA Tower, Attaturk Avenue (East), G-5/1, Islamabad
Ph: +92-51-9206500, Fax: +92-51-2600026
Web: www.nepra.org.pk, E-mail: registrar@nepra.org.pk

No. NEPRA/R/DL/LAG-356/ 5442-48

April 18, 2017

Mr. Waqas Qureshi
Chief Executive Officer
Trans Atlantic Energy (Private) Limited
1st Floor Bahria Complex-III
Karachi.

Subject: **Grant of Generation Licence No. WPGL/43/2017**
Licence Application No. LAG-356
Trans Atlantic Energy (Private) Limited (TAEPL)

Reference: *Your application vide letter No. Nil, dated June 10, 2016 (received on June 13, 2016).*

Enclosed please find herewith Generation Licence No. WPGL/43/2017 granted by National Electric Power Regulatory Authority (NEPRA) to "Trans Atlantic Energy (Private) Limited (TAEPL)" for its 48.30 MW Wind Power Plant located at Deh Kohistan, Jhimpir, District Thatta, in the province of Sindh, pursuant to Section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997). 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 (WPGL/43/2017)

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY ★ NEPRA ★ REGISTRAR

18/04/17

(Syed Safeer Hussain)

Copy to:

1. Secretary, Ministry of Water and Power, A-Block, Pak Secretariat, Islamabad.
2. Chief Executive Officer, Alternative Energy Development Board (AEDB), 2nd Floor, OPF Building, G-5/2, Islamabad
3. Chief Executive Officer, NTDC, 414-WAPDA House, Lahore
4. Chief Executive Officer, CPPA-G, 6th Floor, Shaheed-r-Millat Secretariat, Jinnah Avenue, Blue Area, Islamabad
5. Chief Executive Officer, Hyderabad Electric Supply Company Limited (HESCO), WAPDA Offices Complex, Hussainabad, Hyderabad
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)

Determination of the Authority in the Matter of Application of Trans Atlantic Energy (Private) Limited for the Grant of Generation Licence

April 06, 2017
Case No. LAG-356

(A). Background

(i). In order to harness the potential of Renewable Energy (RE) in the country, Government of Pakistan (GoP) has formulated a policy for the development of RE resources. The policy titled "Policy for Development of Renewable Energy for Power Generation 2006 ("the RE Policy") is in field since 2006. Further, GoP has set up Alternative Energy Development Board (AEDB) as one window facilitator for setting up RE projects in the country.

(ii). AEDB has issued a LoI to Trans Atlantic Energy (Private) Limited (TAEPL) under the RE Policy on March 06, 2013, for setting up an approximately 50 MW wind based generation facility/Wind Power Plant/Wind Farm. The said generation facility/Wind Power Plant/Wind Farm will be setup in the Jhimpir wind corridor, district Thatta, in the province of Sindh.

(iii). According to the terms and conditions of the above mentioned LoI, company carried out a feasibility study of the project. After completion of the said milestone, the sponsors of the project decided to approach the Authority for the grant of generation licence for the proposed generation facility/Wind Power Plant/Wind Farm.

(B). Filing of Application

(i). In accordance with Section-15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 ("the NEPRA Act"), TAEPL submitted an application on June 13, 2016 for grant of the generation licence.

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(ii). The Registrar examined the submitted application to confirm its compliance with the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999 ("the Licensing Regulations"). It was observed that the application lacked some of required information/documentation as stipulated in the Licensing Regulations. Accordingly, Registrar directed TAEPL was to submit the missing information/documentation. TAEPL provided the same on June 27, 2016 and the Registrar submitted the case for consideration of the Authority.

(iii). The Authority considered the matter and found the form and content of the application in compliance with Regulation-3 of the Licensing Regulations. Accordingly, the Authority decided to admit the application for the grant of the generation licence as stipulated in Regulation-7 of the Licensing Regulations. The Authority approved the advertisement containing the prospectus and a notice to the general public about the admission of the application of TAEPL, to invite the general public for submitting their comments as stipulated in Regulation-8 of the Licensing Regulations. Further, the Authority also approved the list of the relevant stakeholders including government ministries, their attached departments, representative organizations and individual experts for informing about the admission of the application of TAEPL and for inviting their comments for the assistance of the Authority under Regulation-9 of the Licensing Regulations.

(iv). In consideration of the above, the advertisement was published in one (01) Urdu and one (01) English national newspapers i.e. "Daily Dunia" and "Business Recorder" respectively on August 28, 2016. Apart from the said, separate letters were also sent to abovementioned relevant stakeholders on August 26, 2016.

(C). Comments of Stakeholders

(i). In reply to the above, the Authority received comments from three (03) stakeholders. These included Board of Investment (BoI), Engineering

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Development Board (EDB) and Anwar Kamal Law Associates (AKLA). The salient points of the comments of said stakeholders are summarized below:-

(a). BoI submitted that it has no specific comments on determination of tariff of the project of TAEPL. However, energy sector is the priority sector of the Government to cater the short fall in the country. Smooth and affordable supply of energy is the backbone for industrial growth as well as attracting foreign direct investment in the country. Board of Investment supported the grant of generation licence subject to consumer friendly & competitive tariff and completion of all codal/technical formalities under rules & regulations;

(b). EDB in its comments recommended that all efforts should be made to utilize the indigenous potential; and

(c). AKLA raised various issues being faced by the electric power sector of the country. It was highlighted that there is under-utilization of various existing generation facilities and resultantly there is surplus capacity. Therefore, induction of new power plants on "take or pay basis" etc. is not justifiable. AKLA contested that RE based generation facilities have higher upfront tariff and also enjoy the status of "must run" making such facilities not viable financially and economically. AKLA questioned the induction of RE projects in the scenario of reducing oil prices, proposed long term contracts of R-LNG, and the under construction coal power projects. AKLA opined that instead of setting up new power plants at costlier cost, efforts should be made to utilize the available generation capacity first to its full. Further, efforts should be made to encourage investors to setup new generation facilities under 'Take and Pay'

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regime in a competitive power market. ALKA opposed the grant of generation licence to TAEPL.

(ii). The Authority examined comments of the above stakeholders and found that BoI, EDB has supported the grant of generation licence in explicit terms. Whereas, AKLA overwhelmingly opposed the grant of generation licence to TAEPL. In view of the said, the Authority decided seeking the perspective of TAEPL on the comments of AKLA.

(iii). Regarding the objections of AKLA, it was submitted that comments are general in nature and are filed without fully understanding the dynamics of the electric power sector of the country and project financing etc. It was submitted that presently the country has the lowest contribution of RE in the energy mix which needs to be improved to the level of the other regional countries and other developing countries. The greater use of indigenous resources would not only help in diversifying the energy mix but also reduce the dependence on imported fossil fuels, mitigating the supply disruptions and price fluctuation risks.

(iv). Further to the above, TAEPL submitted that AKLA is not fully conversant with the concepts of the installed and operational capacities. In this regard, attention is drawn to the hydel projects which are part of the multi purposes dams primarily meant for storage of water for agriculture purposes and are heavily dependent on the available hydrology. Further, another significant portion of installed capacity is inefficient and it is not economically viable to operate the same. Further, the fuel prices are volatile and cannot be assumed to remain on the existing low level to decide the future projects.

(v). In addition to the above, TAEPL acknowledged that new projects on coal and RLNG are being set up. However, TAEPL maintained that demand for the electric power would continue to rise therefore, efforts should be made to maintain the sizeable share of the RE in the overall energy mix of the country. Further to the said, TAEPL stressed that addition of RE will not only provide clean energy but result in savings of precious foreign exchange of the

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country. TAEPL submitted that in view of the current position of the electric power sector, it would be detrimental for the future projects and the sponsors changing from "take or pay" to "take and pay" as in the later situation there cannot be any guarantee for lenders for the required payments to pay off the debt.

(vi). The Authority considered the above submissions and found the response of TAEPL on the comments of AKLA satisfactory. In this regard, the Authority observed that AKLA has raised certain points which are related to regulatory and policy decisions of the GoP. Further, AKLA has reiterated its earlier comments which have already been deliberated during the processing of upfront tariffs for wind projects, therefore, the same does not require any further deliberation. In view thereof, the Authority decided to process the application of TAEPL for the grant of generation licence as stipulated in the Licensing Regulations and NEPRA Licensing (Generation) Rules, 2000 ("the Generation Rules").

(D). Evaluation of the Case

(i). The Authority has examined the submissions of TAEPL including the information provided in its application for the grant of generation licence. The Authority has duly considered the feasibility study of the project, interconnection & dispersal arrangement studies etc., provisions of the RE Policy and relevant rules & regulations.

(ii). The Authority has observed the main sponsor(s) of the project include Trans Capital Holdings (TCH) of USA and Investment Fund for Developing Countries-IFU of Denmark, out of which TCH has vast experience in the financing and acquisition of energy and infrastructure assets, including electric power plants, transmission lines, pipelines and other related assets through private and publicly-traded entities all over the world. Based on the financial strength and other evaluation parameters, AEDB issued LoI and allocated 1000 acres of land to TAEPL in Deh Kohistan, District Thatta, in the province of Sindh for setting up a generation facility/Wind Power Plant/Wind

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Farm of approximately 50.00 MW. In order to implement the project, the sponsors incorporated a Special Purpose Vehicle (SPV) in the name of TAEPL under Section-32 of the Companies Ordinance 1984. The memorandum of association of SPV interalia, includes the business of power generation and sale as one of its business objects.

(iii). The Authority has observed that according to the terms and conditions of the LoI, the applicant carried out a feasibility study of the project including inter alia, generation facility/Wind Power Plant/Wind Farm equipment details, micro-sitting details, power production estimates based on wind mast data of the project site, soil tests reports, technical details pertaining to selected wind turbine generator and other allied equipment to be used in the generation facility/Wind Power Plant/Wind Farm, electrical studies, environmental study and project financing etc. According to the above mentioned feasibility study, the SPV i.e. TAEPL will be setting up a 48.30 MW wind based generation facility/Wind Power Plant/Wind Farm in the Jhimpir wind corridor, district Thatta, Sindh. In this regard, TAEPL has confirmed that the proposed generation facility/Wind Power Plant/Wind Farm will be consisting of 14 x 3.45 MW WTG (i.e. V126-3.45 MW) of Vestas. The Authority has observed that Vestas is one of leading WTG manufacturer in the world and has its presence all over the world including Pakistan. In this regard, the Authority has observed that Vestas has provided or providing WTG for four project with a cumulative capacity of more than 7.5 GW. Further, the selected WTG are of Type-IV which is the latest generation of its type with characteristics supporting grid reliability and stability.

(iv). The Authority has observed that TAEPL carried out the required interconnection and system stability study for dispersal of electric power from the proposed generation facility/Wind Power Plant/Wind Farm. According to the said study, the dispersal of electric power will be made on 132 KV Voltage. The dispersal/interconnection arrangement will be consisting of a 132-KV Double Circuit (D/C) transmission line (measuring about 02 KM) for making an In-Out of 132-KV Single Circuit transmission line connecting the wind farms of Act2

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Wind (Private) Limited to power plant of Din Energy Limited. In this regard, NTDC has also confirmed that necessary arrangements will be made ensuring availability of the dispersal arrangement well before the Commercial Operation Date (COD) of the generation facility/Wind Power Plant/Wind Farm.

(v). The Authority considers 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 Authority considers that the operation of the generation facility/Wind Power Plant/Wind Farm may cause soil pollution, water pollution and noise pollution during construction and operation. In this regard, the Authority has observed that TAEPL also carried out the Initial Environment Examination Study and submitted the same for the consideration and approval of Environmental Protection Agency, Government of Sindh (EPAGoS). In this regard, EPAGoS issued a No Objection Certificate for the project.

(vi). 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), Rule-3(5) and Rule-3(6) of the Generation Rules. In the particular case under consideration, the Authority has observed that conditions of Rule-3(2) and Rule-3(3) stands satisfied as TAEPL 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 facilities. The provision of Rule-3(4) of the Generation Rules regarding holding a public hearing is not applicable as there is no issue which require this exercise. 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 of the Rules also stipulates the conditions pertaining to least cost option criteria

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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 costs and rights-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 tariffs 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.

(vii). In consideration of the above, the Authority clarifies that AEDB/GoP has identified two wind corridors (of Jhimpir and Gharo) in the province of Sindh of the country. The estimated potential for these two corridors is more than 50,000 MW. At the moment, around thirteen (13) projects with a cumulative Installed Capacity of around 650.00 MW have been installed and commissioned whereas another twenty five (25) projects including that TAEPL with cumulative capacity of around 1400.00 MW are in various stages of implementation.

(viii). 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 wind is an indigenous fuel and such fuels have a preference for the energy security. It is pertinent to mention that the Authority through its determination No. NEPRA/TRF-WPT/2017/1542-1544 January 27, 2017 has announced a Benchmark Levelized Tariff for the future wind projects which works out to be U.S. Cents 7.7342/kWh & 6.7467/KWh for local & foreign financing respectively. The said determination envisages conducting bidding among companies/sponsors of the project(s) as stipulated in NEPRA

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Competitive Bidding (Approval Procedure) Regulations, 2014. The said regulation envisages that companies/sponsors of the project(s) will be offering a discount on the announced benchmark tariff meaning thereby that tariff for future wind projects will be less than U.S Cents 7.7342/kWh & 6.7467/KWh for local & foreign financing respectively, which will be very competitive.

(ix). As explained at Para-D(iv) above, the sponsors of the project carried out the grid interconnection study which concludes that the project will not face any constraints in transmission system. Further, being located at reasonable distance from the thick population, the project will not result in costs and rights-of-way issues for the provision of transmission and interconnection facilities. It is pertinent to mention that NTDC has included the project in its long-term forecasts for additional capacity requirements. In view of the explanation give above, it is clear that the project fulfills the requirements of the Least Cost Option Criteria.

(x). In view of the clarification and justifications given above, the Authority is of the considered view that the project of TAEPL fulfills the eligibility criteria for grant of generation licence as stipulated in the NEPRA Act, rules and 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.

(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

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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 Energy Security Action Plan 2005 approved by GoP, duly recognizes this very aspect of power generation through renewable energy and envisages that at least 5% of total national power generation capacity (i.e. 9700 MW) to be met through RE resources by 2030.

(iii). The Authority considers that the proposed project of TAEPL is consistent with the provisions of Energy Security Action Plan 2005. The project will help in diversifying the energy portfolio of 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 reduction in carbon emission by generating clean electricity, thus improving the environment.

(iv). As explained at Para-D(vi) above, TAEPL 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/Wind Power Plant/Wind Farm. In this regard, the Authority has observed that EDGoS allocated land to TAEPL for setting up a generation facility/Wind Power Plant/Wind Farm. The said details have been incorporated in Schedule-I of the proposed generation licence. The Authority directs TAEPL to utilize the allocated land exclusively for the proposed wind power project and not to carry out any other generation activity on the said land except with its prior approval.

(v). Rule-5(1) of the Generation Rules stipulates that the term of a generation licence must be consistent with the maximum expected useful 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 TAEPL, its generation facility/Wind Power Plant/Wind Farm will achieve COD by July 31, 2019 and will have a useful life of more than twenty (20) years from its COD. In this regard, TAEPL has requested that the term of

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the proposed generation licence may be fixed as at least twenty (20) years. As TAEPL has consented for a shorter term of twenty (20) years, the Authority fixes the term of the generation licence as twenty (20) 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 view of the said, the Authority through Artcile-6 of the generation licence directs TAEPL to charge the power purchaser only such tariff which has been determined, approved or specified by the Authority. The Authority directs TAEPL to adhere to the Article-6 of the generation licence in letter and spirit without any exception.

(vii). Regarding compliance with the environmental standards, the Authority directs TAEPL to ensure that the project will comply with the environmental standards during the term of the generation licence. In view of the said, the Authority has included a separate article (i.e. Artcle-10) in the generation licence along with other terms and conditions that the licensee will comply with relevant environmental standards. Further, the Authority directs TAEPL to submit a report on a bi-annual basis, confirming that operation of its project is compliant with required environmental standards as prescribed by the concerned environmental protection agency.

(viii). The proposed generation facility/Wind Power Plant/Wind Farm of TAEPL 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. TAEPL has informed that the project will achieve COD by July 31, 2019 which is within the deadline of the Koyoto Protocol. In view of this, an article (i.e. Article-14) for carbon credits and its sharing with the power purchaser has been included in the generation licence. In view of the said, the Authority directs TAEPL to initiate the process in this regard at the earliest so that proceeds for the carbon credits are materialized. TAEPL shall be required

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to share the proceeds of the carbon credits with the power purchaser as stipulated in Article-14 of the generation licence.

(ix). In view of the above, the Authority hereby approves the grant of generation licence to TAEPL 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 there under and other applicable documents.

Authority:

Saif Ullah Chattha
(Member)

10.4.2017

Syed Masood-ul-Hassan Naqvi
(Member)

11/4

Himayat Ullah Khan
(Member/Vice Chairman)

11.4.17.

Tariq Saddozai
(Chairman)

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18/04/17

National Electric Power Regulatory Authority (NEPRA)
Islamabad – Pakistan

GENERATION LICENCE

No. WPGL/43/2017

In exercise of the Powers conferred upon the National Electric Power Regulatory Authority (NEPRA) under Section-15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, the Authority hereby grants Generation Licence to:

TRANS ATLANTIC ENERGY (PRIVATE) LIMITED

Incorporated under Section-32 of Companies Ordinance, 1984 (XLVII of 1984) Having Corporate Universal Identification No. 0000011018120050507, dated May 24, 2005

for its Generation Facility/Wind Power Plant/ Wind Farm Located at Deh Kohistan, Jhimpir, District Thatta, in the Province of Sindh

(Installed Capacity: 48.30 MW Gross ISO)

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

Given under my hand on 18th day of April Two Thousand & Seventeen and expires on 30th day of July Two Thousand & Thirty Nine.

18/04/17

Registrar

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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). "AEDB" means the Alternate 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, 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/Wind Power Plant/Wind Farm of the Licensee on which the electric power from all the WTGs is collected for supplying to the Power Purchaser;

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(g). "Carbon Credits" mean the amount of Carbon Dioxide (CO_2) and other greenhouse gases not produced as a result of generation of electric energy by the generation facility/Wind Power Plant/Wind 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/Wind Power Plant/Wind Farm, which are available or can be obtained in relation to the generation facility/Wind Power Plant/Wind Farm after the COD;

(h). "Commercial Operations Date (COD)" means the day immediately following the date on which the generation facility/Wind Power Plant/Wind Farm of the Licensee is commissioned;

(i). "CPPA-G" means Central Power Purchasing Agency (Guarantee) Limited or any other entity created for the like purpose;

(j). "Distribution Code" means the distribution code prepared by the concerned XW-DISCO and approved by the Authority, as it may be revised from time to time with necessary approval of the Authority;

(k). "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/Wind Power Plant/Wind Farm, as may be amended by the parties thereto from time to time;

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

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(m). "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/Wind Power Plant/Wind Farm;

(n). "Grid Code" means the grid code prepared and revised from time to time by NTDC with necessary approval of the Authority;

(o). "HESCO" means Hyderabad Electric Supply Company Limited or its successors or permitted assigns;

(p). "IEC" means "the International Electrotechnical Commission or its successors or permitted assigns;

(q). "IEEE" means the Institute of Electrical and Electronics Engineers or its successors or permitted assigns;

(r). "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/Wind Power Plant/Wind Farm, as may be amended from time to time;

(s). "Letter of Support (LoS)" means the letter of support issued or to be issued by the GoP through the AEDB to the Licensee;

(t). "Licensee" means **TRANS ATLANTIC ENERGY (PRIVATE) LIMITED** or its successors or permitted assigns;

(u). "Licensing Regulations" mean the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999 as amended or replaced from time to time;

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(v). "Net Delivered Energy" means the net electric energy expressed in kWh generated by the generation facility/Wind Power Plant/Wind Farm of the Licensee at its outgoing Bus Bar and delivered to the Power Purchaser;

(w). "NTDC" means National Transmission and Despatch Company Limited or its successors or permitted assigns;

(x). "Policy" means the Policy for Development of Renewable Energy for Power Generation, 2006 of GoP as amended from time to time;

(y). "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;

(z). "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;

(aa). "Wind Power Plant/Wind Farm" means a cluster of WTGs situated in the same location of a generation facility used for production of electric energy;

(bb). "Wind Turbine Generator (WTG)" means the machines installed at the generation facility/Wind Power Plant/Wind Farm with generators for conversion of wind energy into electric energy;

(cc). "XW-DISCO" means "an Ex-WAPDA distribution company engaged in the distribution of electric power".

1.2 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.

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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/Wind Power Plant/Wind 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/Wind Power Plant/Wind 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/Wind Power Plant/Wind 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 (20) years from the COD of the generation facility/Wind Power Plant/Wind Farm of the Licensee.

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 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.

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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. 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.

7.2 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.

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Article-10
Compliance with Environmental & Safety Standards

10.1 The generation facility/Wind Power Plant/Wind 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/Wind Power Plant/Wind 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/Wind Power Plant/Wind Farm. The Licensee shall be responsible for the up-gradation (step up) of generation voltage up to the required dispersal voltage level.

Article-12
Performance Data

12.1 The Licensee shall install monitoring mast with properly calibrated automatic computerized wind speed recording meters at the same height as that of the WTG.

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

12.3 The Licensee shall transmit the wind speed and power output data of its generation facility/Wind Power Plant/Wind Farm to the control room of the Power Purchaser.

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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/Wind Power Plant/Wind Farm. The Licensee shall share the said proceeds with the Power Purchaser as per the Policy.

Article-15
Design & Manufacturing Standards

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

Article-16
Power Curve

The power curve for the WTG 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/Wind Power Plant/Wind Farm.

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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 Facility/Wind Power Plant/Wind Farm of the Licensee are described in this Schedule.

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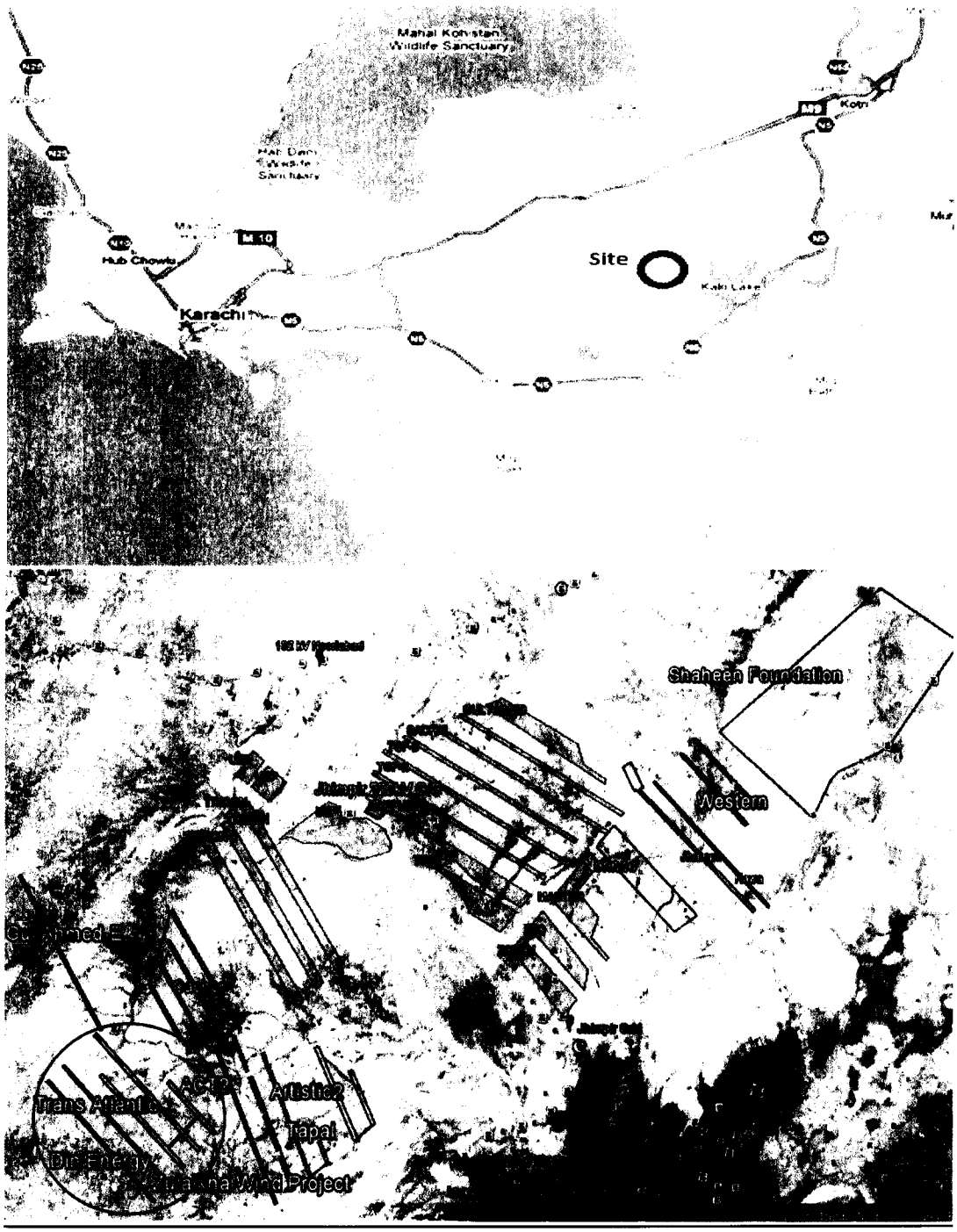
Location
of the Generation Facility/Wind Power Plant/ Wind Farm



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Land Coordinates of the Generation Facility/Wind Power Plant/ Wind Farm

	Geodetic Coordinates	
	[illegible]	[illegible]
	24° 93' 52.61"	[illegible]
Boundary 2	[illegible]	67° 74' 41.31"
	24° 96' 42.25"	[illegible]
Boundary 4	[illegible]	67° 81' 11.39"
	24° 94' 49.31"	[illegible]
Boundary 6	[illegible]	67° 74' 51.78"
	24° 94' 34.00"	[illegible]
Boundary 8	[illegible]	67° 79' 96.06"
	24° 94' 59.53"	[illegible]
Boundary 10	[illegible]	67° 80' 56.86"
	24° 94' 74.86"	[illegible]
Boundary 12	[illegible]	67° 80' 67.36"
	24° 95' 21.14"	[illegible]
Boundary 14	[illegible]	67° 81' 75.64"
	24° 96' 16.08"	[illegible]
Boundary 16	[illegible]	67° 79' 17.33"
	24° 96' 00.75"	[illegible]
Boundary 18	[illegible]	67° 81' 02.25"
	24° 93' 67.61"	[illegible]
Boundary 20	[illegible]	67° 81' 12.72"

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Micro-Sitting of the Generation Facility/Wind Power Plant/ Wind Farm

Wind Turbine Generator (WTG)	Longitude (N)	Latitude (E)
WTG01	27, 60, 169	37, 80, 21
WTG02	27, 60, 324	37, 77, 77
WTG03	27, 60, 479	37, 75, 33
WTG04	27, 60, 634	37, 72, 89
WTG05	27, 60, 789	37, 70, 45
WTG06	27, 60, 944	37, 68, 01
WTG07	27, 61, 099	37, 65, 58
WTG08	27, 61, 409	37, 60, 70
WTG09	27, 61, 564	37, 58, 26
WTG10	27, 61, 719	37, 55, 82
WTG11	27, 61, 874	37, 53, 38
WTG12	27, 62, 030	37, 50, 94
WTG13	27, 62, 185	37, 48, 50
WTG14	27, 62, 340	37, 46, 07

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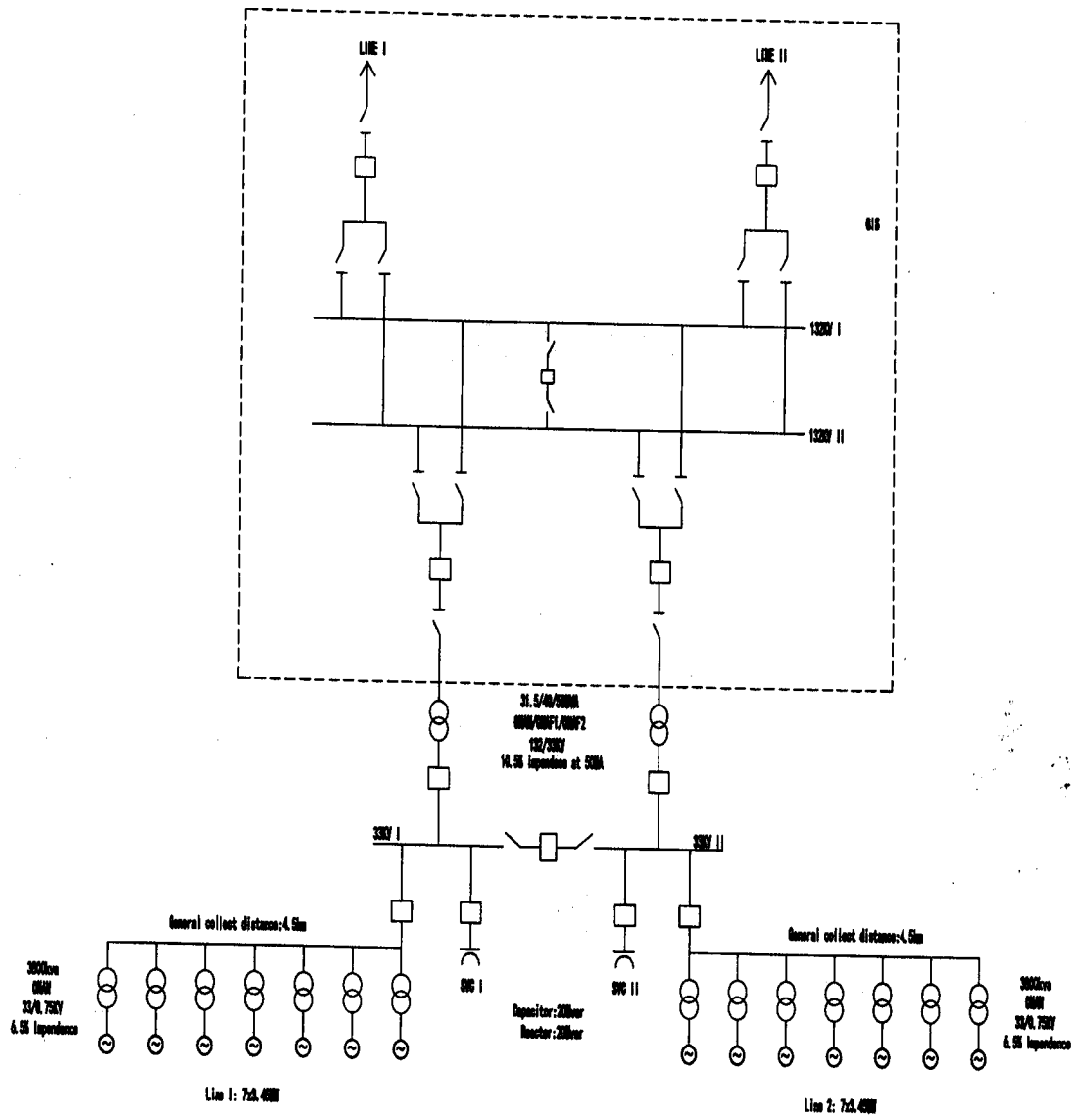
Single Line Diagram of the Generation Facility/Wind Power Plant/ Wind Farm



Interconnection Arrangement/Transmission Facilities for Dispersal of Power from Generation Facility/Wind Power Plant/Wind Farm

The electric power generated from the Generation Facility/Wind Power Plant/Wind Farm of Artistic Wind Power (Private) Limited (AWPPL) shall be dispersed to the National Grid through the load center of HESCO.

(2). The proposed Interconnection Arrangement/Transmission Facilities for dispersal of power from Generation Facility/Wind Power Plant/Wind Farm of AWPPL will consist of the following:-

(a). A 132-KV double circuit transmission line (measuring about 02 KM) for making an In-Out of 132-KV Single Circuit transmission line connecting the wind farms of Act2 Wind (Private) Limited to power plant of Din Energy Limited.

(3). The scheme of interconnection of Generation Facility/Wind Power Plant/Wind Farm of AWPPL also proposes the following reinforcement already in place in Jhimpir cluster:-

(a). A new 220/132 KV Jhimpir-2 substation 3x250 MVA, 220/132 KV transformers;

(b). 220 kV double circuit (D/C) transmission line, approximately 18 km long, on twin-bundled Greeley conductor for making In/Out of one circuit of the existing Jamshoro – KDA-33 D/C transmission line at Jhimpir-2;

(c). 220 kV D/C transmission line, approximately 7 km long, on twin-bundled Greeley conductor for making In/Out of one of the planned Jhimpir-New (Jhimpir-1) - Gharo new D/C transmission line at Jhimpir-2; and

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(d). 132 kV D/C transmission line, approximately 50 km long on twin bundled Greeley conductor for connecting the seven (07) wind power plants including Artistic Wind Power (Private) Limited with Jhimpir-2.

(4). Any change in the above mentioned Interconnection Arrangement/Transmission Facilities duly agreed by AWPPL, NTDC and HESCO, shall be communicated to the Authority in due course of time.

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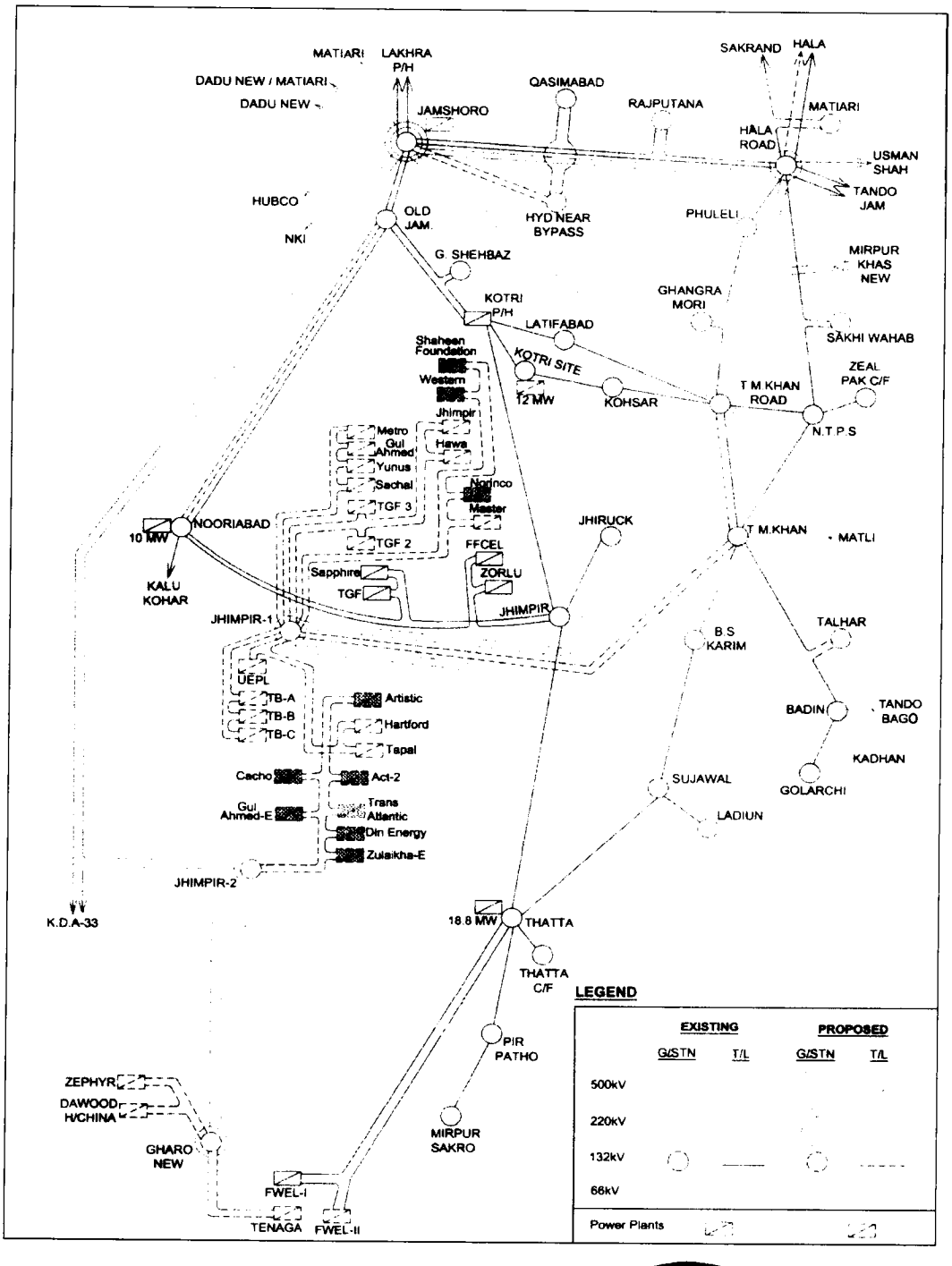
Schematic Diagram of Interconnection Arrangement/Transmission Facilities for Dispersal of Power from the Generation Facility/Wind Power Plant/Wind Farm



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Details of Generation Facility/Wind Power Plant/ Wind Farm

(A). General Information

(i).	Name of the Company/Licensee	Trans Atlantic Energy (Private) Limited
(ii).	Registered/Business Office of the Company	First Floor, Bahria Complex III, M.T. Khan Road, Karachi
(iii).	Location of the Generation Facility	Deh Kohistan, Jhimpir, District Thatta, Sindh
(iv).	Type of Generation Facility	Wind Power Plant

(B). Wind Farm Capacity & Configuration

(i).	Wind Turbine Type, Make & Model	Vestas (V126-3.45 MW)
(ii).	Installed Capacity of the Generation Facility	48.30 MW
(iii).	Number of Units/Size of each Unit	14 x 3.45 MW

(C). Wind Turbine Details

(a).	**Rotor**	
(i).	Number of Blades	3
(ii).	Rotor Speed	5.3-16.5 rpm
(iii).	Rotor Diameter	126 m
(iv).	Swept Area	12, 469 m^2
(v).	Power Regulation	Full Scale Converter

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(vi).	Cut-in wind speed	3 m/s
(vii).	Rated power wind speed	11.5 m/s (air density = 1.225 kg/m^3)
(viii).	Cut-out wind speed	22.5 m/s
(ix).	Survival wind speed	52.5 m/s for 3 Sec, 37.5 m/s for 10 Mins
(x).	Pitch regulation	Hydraulic pitch cylinder drives a ring gear mounted to the inner race of the blade pitch bearing
(b). Blades		
(i).	Blade Length	61.66 m
(ii).	Material	Fiberglass reinforced epoxy, carbon
(iii).	Weight	12,400 kg
(c). Gear Box		
(i).	Type	Two planetary stages and one helical stage
(ii).	Gear ratio	1 : 112.8
(iii).	Weight	27,127 kg
(iv).	Oil quantity	1000-1200 Liters
(v).	Main shaft bearing	Roller bearing mounted in a pillow-block housing arrangement
(d). Converter		
(i).	Type	Full Scale Converter
(ii).	Rated Voltage	750 V
(iii).	Rated Current	3286 A

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(e). Generator		
(i).	Power	3.45 MW
(ii).	Voltage	750 V
(iii).	Type	Asynchronous with cage rotor
(iv).	Speed	1450 – 1550 rpm
(v).	Enclosure class	IP-54
(vi).	Coupling	Flexible coupling
(vii).	Efficiency	≥ 97%
(viii).	Weight	8,050 kg
(ix).	Power Factor	±0.90 (Leading to Lagging)
(f). Yaw System		
(i).	Yaw Bearing	Plain bearing system
(ii).	Brake	Forged yaw ring heat-treated. Plain bearings PETP
(iii).	Yaw Drive	Multiple stages geared
(iv).	Speed	0.46 Degree/Sec
(g). Control System		
(i).	Type	Automatic or manually controlled
(ii).	Grid Connection	Via Full scale converter
(iii).	Scope of Monitoring	Remote monitoring of more than 500 different parameters, e.g. temperature sensors, pitch parameters, speed, generator torque, wind speed and direction, etc.
(iv).	Recording	Production data, event list, long and short-term trends

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(h). Brake		
(i).	Design	Three independent systems, fail safe (individual pitch)
(ii).	Operational Brake	Aerodynamic brake achieved by feathering blades
(iii).	Secondary Brake	Mechanical brake on (high speed) shaft of gearbox
(i). Tower		
(i).	Type	Cylindrical tubular steel tower
(ii).	Hub Heights	137 m

(D). Other Details

(i).	COD of the Generation Facility (Anticipated)	July 31, 2019
(ii).	Minimum Useful Life of the Generation Facility from COD	20 years

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Power Curve
of Wind Turbine Generator
Vestas (V126-3.45 MW)
(Tabular)

12.1.1 Power Curves, Noise Mode 0

3.0	30	13	14	16	17	19	20	22	23	25	27	28	32	33
3.5	97	63	66	69	72	75	78	81	84	87	91	94	100	103
4.0	179	128	133	138	142	147	152	156	161	166	170	175	184	189
4.5	278	205	212	219	225	232	239	245	252	259	265	272	285	292
5.0	397	297	306	315	324	333	342	351	360	369	378	388	406	415
5.5	539	407	420	432	444	455	467	479	491	503	515	527	551	563
6.0	711	541	557	572	588	603	619	634	650	665	680	696	726	742
6.5	913	699	718	738	758	777	797	816	836	855	874	894	933	952
7.0	1150	884	909	933	957	982	1006	1030	1054	1078	1102	1126	1174	1198
7.5	1420	1095	1125	1155	1184	1214	1244	1273	1302	1332	1361	1390	1448	1477
8.0	1723	1336	1371	1407	1442	1478	1513	1548	1584	1619	1654	1688	1757	1791
8.5	2060	1606	1648	1690	1732	1774	1815	1857	1898	1939	1979	2020	2100	2140
9.0	2434	1906	1955	2004	2053	2102	2150	2197	2245	2293	2340	2387	2480	2526
9.5	2804	2232	2287	2343	2399	2455	2507	2559	2611	2664	2710	2757	2845	2886
10.0	3090	2574	2632	2689	2747	2805	2850	2896	2941	2987	3021	3056	3117	3143
10.5	3238	2887	2933	2980	3026	3073	3102	3131	3160	3189	3205	3221	3248	3258
11.0	3290	3100	3130	3161	3191	3222	3235	3248	3261	3275	3280	3285	3293	3295
11.5	3299	3227	3240	3254	3268	3282	3285	3289	3293	3296	3297	3298	3299	3300
12.0	3300	3277	3282	3287	3291	3296	3297	3298	3299	3300	3300	3300	3300	3300
12.5	3300	3293	3295	3296	3298	3299	3299	3300	3300	3300	3300	3300	3300	3300
13.0	3300	3298	3298	3299	3299	3300	3300	3300	3300	3300	3300	3300	3300	3300
13.5	3300	3299	3299	3299	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
14.0	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
14.5	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
15.0	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
15.5	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
16.0	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
16.5	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
17.0	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
17.5	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
18.0	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
18.5	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
19.0	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
19.5	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
20.0	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
20.5	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
21.0	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
21.5	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
22.0	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
22.5	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300

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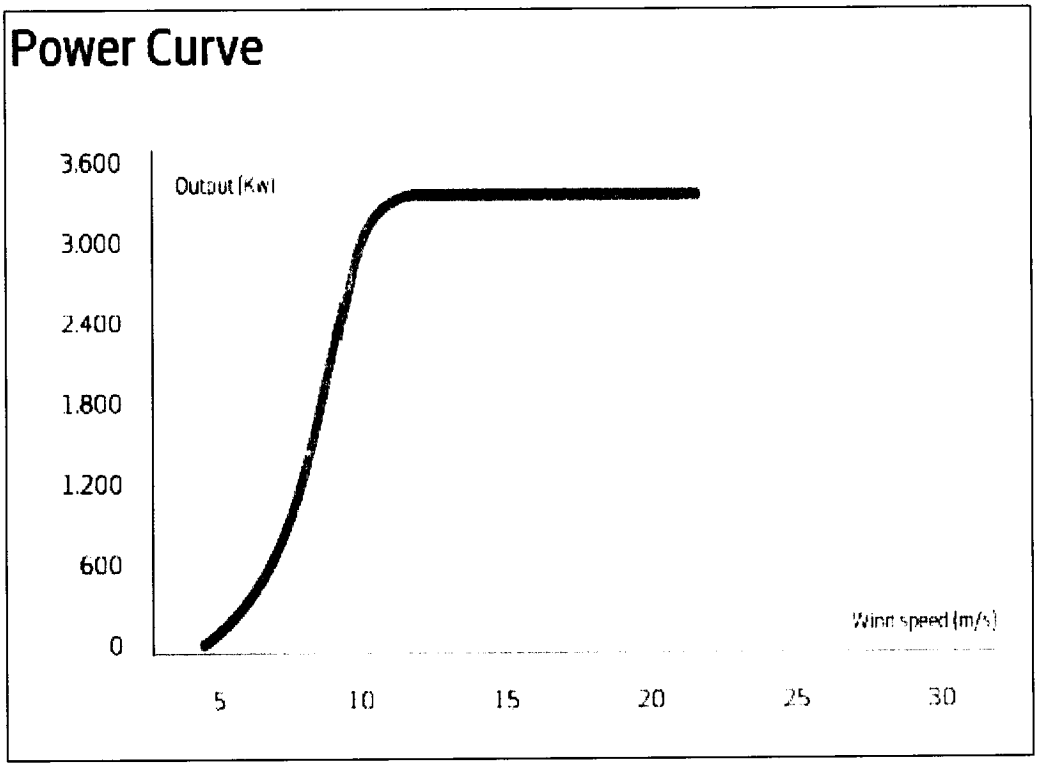
Power Curve
of Wind Turbine Generator
Vestas (V126-3.45 MW)
(Graphical)



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SCHEDULE-II

The Total Installed/Gross ISO Capacity (MW), Total Annual Full Load Hours, Average Wind Turbine Generator (WTG) Availability, Total Gross Generation of the Generation Facility/Wind Farm (in GWh), Array & Miscellaneous Losses (GWh), Availability Losses (GWh), Balance of Plant Losses (GWh) and Annual Energy Generation (GWh) of the Generation Facility/Wind Power Plant/Wind Farm of Licensee is given in this Schedule

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SCHEDULE-II

(1).	Total Installed Gross ISO Capacity of the Generation Facility /Wind Farm (MW)	48.30 MW
(2).	Total Annual Full Load Hours	3388 Hrs
(3).	Average Wind Turbine Generator (WTG) Availability	97.0%
(4).	Total Gross Generation of the Generation Facility/Wind Farm (GWh)	240.81 GWh
(5).	Array & Miscellaneous Losses (GWh)	12.006 GWh
(6).	Availability Losses (GWh)	7.2243 GWh
(7).	Balance of Plant Losses (GWh)	7.2243 GWh
(8).	Annual Energy Generation (20 year equivalent Net AEP) (GWh)	167.72 GWh
(9).	Net Capacity Factor	38.29%

Note

All the above figures are indicative as provided by the Licensee. The Net Delivered Energy to Power Purchaser for dispatch will be determined through procedures contained in the EPA.

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