National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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Registrar

No. NEPRA/R/DL/LAG-420/ 12698-704 August 8, 2018

Mr. Abdul Sattar Jumani,
Chief Executive Officer,
Tricom Wind Power (Private) Limited,
7 - A, Tabba Street, Muhammad Ali Society,
Karachi

Subject: **Grant of Generation Licence No. WPGL/54/2018**
Licence Application No. LAG-420
Tricom Wind Power (Private) Limited (TWPPL)

Reference: TWPPL's application vide letter dated January 22, 2018 (received on January 25, 2018).

Enclosed please find herewith Generation Licence No. WPGL/54/2018 granted by National Electric Power Regulatory Authority (NEPRA) to Tricom Wind Power (Private) Limited (TWPPL) for its 50.0 MW Wind Power Plant located at 7/1 Deh Kohistan, Tapo Jhimpir, Taluka and District Thatta in the province of Sindh, pursuant to Section 14B 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/54/2018)

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(Syed Safeer Hussain)

Copy to:

1. Secretary, Ministry of Energy (Power Division), A-Block, Pak Secretariat, Islamabad.
2. Chief Executive Officer, Alternative Energy Development Board (AEDB), 2nd Floor, OPF Building, G-5/2, Islamabad
3. Managing Director, NTDC, 414-WAPDA House, Lahore.
4. Chief Executive Officer, CPPA-G, ENERCON Building, Sector G-5/2, 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 Tricom Wind Power (Pvt.) Limited for the Grant of Generation Licence

August 08,2018
Case No. LAG-420

(A). Background

(i). In order to commercially harness the potential of the Renewable Energy (RE) resources in the country, the Government of Pakistan (GoP) has set up Alternative Energy Development Board (AEDB) as one window facilitator for the prospective investors. In this regard, the GoP has formulated a policy framework namely "the Policy for Development of Renewable Energy for Power Generation 2006" (the "RE Policy").

(ii). Under the above mentioned RE Policy, the Federal Government as well as the Provincial Governments can support the implementation of RE projects. In this regard, the Energy Department of Government of Sindh (EDGoS) issued Letter of Intent (LoI) to Adamjee Group of Companies (AGoC) for setting up a 50.00 MW wind based generation facility/Wind Power Plant/Wind Farm in the wind corridor of Jhimpir in district Thatta, in the province of Sindh. In order to develop the project, the sponsors/AGoC incorporated a Special Purpose Vehicle (SPV) in the name of Tricom Wind Power (Pvt.) Limited (TWPPL).

(iii). According to the terms and conditions of the above mentioned LoI, the company was required to carry out a detailed feasibility study of the project including technical study, Grid Interconnection Study (GIS), environmental study and financial study etc. 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.

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(B). Filing of Application

(i). TWPPL submitted an application on January 25, 2018 for the grant of generation licence in terms of Section-15 of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the "NEPRA Act") read with the relevant provisions of the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999 (the "Licensing Regulations").

(ii). The Registrar examined the submitted application and found that application was deficient in terms of the Licensing Regulations. Accordingly, the Registrar directed TWPPL for submitting the missing information/documents as required under the said regulations. TWPPL completed the submission of missing information/documentation by February 21, 2018. Thereafter, the Registrar placed the matter before the Authority to decide the admission of the application or otherwise. The Authority considered the matter and found the form and content of the application in substantial compliance with Regulation-3 of the Licensing Regulations. Accordingly, the Authority admitted the application on March 08, 2018 for consideration of the grant of the generation licence as stipulated in Regulation-7 of the Licensing Regulations. The Authority 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. Accordingly, notices were published in one (01) Urdu and one (01) English newspapers on March 10, 2018.

(iii). In addition to the above, the Authority also approved a list of stakeholders for 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 March 13, 2018, soliciting their comments for assistance of the Authority.

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(C). Comments of Stakeholders

(i). In reply to the above, the Authority received comments from five (05) stakeholders. These included Pakistan Council of Renewable Energy Technologies (PCoRET), Engineering Development Board (EDB), Board of Investment (BoI), Central Power Purchasing Agency (Guarantee) Limited (CPPAGL) and Ministry of Science and Technology (MoST). The salient points of the comments offered by the said stakeholders are summarized below: -

(a). PCoRET in comments stated that the proposed power plant of TWPPL is being set up in the rural area of the Province of Sindh which would help to overcome the shortage of electricity in the country. Further, PCoRET stated that it is not in a position to provide specific comments/views unless the detail profile of the company and other technical parameters are provided. In this regard, AEDB is the right and suitable entity for scrutiny and certification of different private power generation companies as per its mandate;

(b). EDB submitted that although the scope of the project is not related to it however, it is recommended that efforts should be made to utilize indigenous potential for setting up the power plant;

(c). BoI remarked that energy is priority sector of the Government of Pakistan (GoP) to cater the short fall in the country. It was stated that affordable and smooth supply of energy is the back bone for industrial growth as well as attracting FDI in the country. BoI expressed that the investors should be encouraged to invest in all sectors including the electric power sector;

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(d). CPPAGL commented that before considering the application of TWPPL the Authority may consider the Planning Code (Clause PC-4) regarding forecasting and generation expansion plan. The quantum in the case of RE for 2017-18 has not been approved/finalized by the Grid Code Review Panel (GCRP). Further to the said, CPPAGL stated that Cabinet Committee on Energy (CCoE) has decided that all project based on wind, solar, small hydro and bagasse are to be awarded through competitive bidding and this aspect may also be considered.

(e). MoST stated that installation of a 50.00 MW wind project in the rural area of the Province of Sindh would help to overcome the electricity shortfall in the country.

(ii). The Authority reviewed the above comments of the stakeholders and decided to seek the perspective of TWPPL on the observations of EDB and CPPAGL. On the comments of EDB, it was submitted that best efforts would be made to use the locally available engineering capabilities and skills. About the comments of CPPAGL, it was clarified that the project company has carried out a detailed Grid Interconnection Study (GIS) for the project after obtaining proper and necessary permission/data from NTDC. The GIS was completed after a hectic effort of several months wherein a number of observations were raised and the same were addressed and accordingly, NTDC accorded approval of the same. In this regard, it is pertinent to mention that the project is duly included in the expansion plan of NTDC as the GIS has been approved. Regarding the quantum of RE for the year 2017-18, it was clarified that the project has a tentative Commercial Operation Date (COD) of June 30, 2020 and has no nexus with the quantum of RE for 2017-18 and its approval.

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(iii). About the observation of CPPAGL that in terms of the decision of the Cabinet Committee on Energy (CCoE), all future projects will be awarded through competitive bidding, TWPPL clarified that whichever method is adopted for award of tariff by the appropriate/competent forum, the same will be followed in letter and spirit. TWPPL submitted that its current application was for the grant of Generation Licence and the same has no nexus with the grant/award of tariff.

(iv). The Authority considered the above submissions of TWPPL on the observations of EDB and CPPAGL and found the same plausible. Accordingly, the Authority decided to proceed further in the matter as stipulated in the NEPRA Licensing (Generation) Rules, 2000 (the "Generation Rules") and the Licensing Regulations.

(D). Evaluation/Findings

(i). The Authority has considered the submissions of TWPPL including the information/documentation provided in its application for the grant of generation licence. The Authority has also considered the feasibility study of the project, GIS, the applicable provisions of the RE Policy, the relevant rules and regulations.

(ii). The Authority has observed that the sponsors of the project include Adamjee Group (AG) and Yunus Brother Group (YBG) each holding twenty-five percent (25%) and seventy-five percent (75%) of the equity of the SPV/project company. Both the said groups have a history of venturing in new businesses and their successful management. AG had been a prominent and highly reputed name amongst the business circles of the Indian subcontinent. The group initially originated as a jute and banking conglomerate, later spreading to other industries such as tea, textiles, matches, sugar, paper board, chemicals, engineering food and insurance. AG has been founder of various institutions in Pakistan including MCB Bank (one of the largest banks), NIT (Largest asset management company with PKR 118 billion), Adamjee Insurance Company (2nd

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Largest insurance company in Pakistan), Adamjee Foundation, Adamjee Jute Mills (Largest Jute Mills in the World) and Pakistan International Airlines.

(iii). About YBG, the same has also a history of managing successful businesses in the era of post partition. YBG started its business as fabric trading house which has now turned into one of the largest conglomerates in Pakistan in a period spanning four decades. YBG has investment in cement, textile, chemical, commodity trading, power generation, real estate and dairy products. It is pertinent to mention that YBG has a set up captive power plants at different locations as part of the cement and other facilities with a cumulative installed capacity of about 260 MW. The group has already set up a Wind Power Project which is operational since September 16, 2016 and has so far supplied approx. 173.40 GWh of energy to the National Grid. In consideration of the said, the Authority is satisfied that sponsors have good financial and technical capability to develop the proposed project.

(iv). The Authority has observed that EDGoS issued LoI for development of the project on the basis of the financial strength and other evaluation parameters. In this regard, Govt. of Sindh (GoS) has allocated 347 acres of land in the Jhimpir wind corridor at 7/1 Deh Kohistan, Tapo Jhimpir, taluka and district Thatta in the province of Sindh for setting up a 50.00 MW generation facility/Wind Power Plant/Wind Farm. As explained above, for the implementation of the project, the sponsors have incorporated a SPV in the name of TWPPL under Section-32 of the Companies Ordinance, 1984 (Corporate Universal Identification No. 0092812, dated April 06, 2015). The registered/business office of the SPV is 7-A, Tabba Street, Muhammad Ali Society Karachi in the province of Sindh. According to the Memorandum of Association, the objects of the company, inter alia, include business of power generation and its sale thereof. The Authority has observed that in view of the good repute of the sponsors which have strong financial and technical background to carry out the project various local and foreign financing institutions have expressed their willingness to fund the debt part of the project. According to

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the submitted information, the total outlay of the project will be U.S. $ 87.65 million which will be financed through a combination of debt (U.S. $ 70.12 million) and equity (U.S. $ 17.53 million) in a ratio of 80:20 which is in line with the benchmark set out in the RE Policy and the determinations of the Authority pertaining to tariff for the wind projects.

(v). The Authority has noticed that according to the terms and conditions of the LoI, the sponsors carried out a feasibility study of the project *inter alia* including, wind power plant equipment details, micro-sitting details, power production estimates based on wind mast data of the project site, soil tests reports, technical details pertaining to the selected Wind Turbine Generator (WTG) and other allied equipment to be used in the proposed generation facility/Wind Power Plant/Wind Farm, GIS, environmental study and project financing etc.

(vi). The Authority has duly considered the submitted feasibility study of the project which has also been approved by EDGoS and it reveals that the company has considered various world class manufactures of WTG including General Electric-GE, VESTAS, Gamesa, Nordex, Suzlon, Ming Yang and Goldwind etc. After duly considering the various factors including (a). wind resource position of the corridor of Jhimipir (b). capital cost of equipment/WTG; (c). lead time for supply of equipment/WTG; (d). expected energy yield of WTG; (e). reliability and compliance with Grid Code; (f). availability of suitable operation and maintenance teams (including easiness/availability of spare parts for WTG etc.), the company decided to select WTG of G114-2.0 MW of Gamesa Corporation Spain. The Authority has observed that Gamesa is one of the world leader in the wind industry and has significant share worldwide. The feasibility study also optimized the size of the proposed generation facility/Wind Power Plant/Wind Farm to 50.00 MW having 25 x 2.00 MW of WTG. In consideration of the above, the Authority has observed that the proposed WTG is third generation (Type-III) having induction generator with gearbox. The said WTG inherits many of the technologies developed over the last 15 years for the Gamesa 2.0 MW

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platform. Now, with a 114 m rotor, the G114-2.0 MW has a 38% larger swept area than the G97-2.0 MW and produces over 20% more energy annually. The new 56 m blade with state-of-the-art airfoil design ensures maximum energy production, reduced noise levels and a significantly lower cost of energy for Class II/III sites. The proposed WTG has better feedback and control system with good characteristics for grid reliability and stability for grid as required in the Grid Code.

(vii). The Authority has noted that sponsors of the project carried out the GIS 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 132 kV D/C transmission line approx. 5.50 km long, on twin bundled AASC Greeley conductor for making an In-Out of one circuit 132kV D/C transmission line between the WPPs/Projects of Norinco and Sinowell. In this regard, National Transmission and Despatch Company Limited (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.

(viii). 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 is of the considered opinion 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 TWPPL 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, the Authority has found that EPAGoS has issued a No Objection Certificate (NOC) for the construction of the project.

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(ix). 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. In the particular case under consideration, the Authority has observed that TWPPL has provided details of location, technology, size, net capacity/energy yield, interconnection arrangements, technical limits, technical functional specifications and other details specific to the generation facility/Wind Power Plant/Wind Farm satisfying the provisions of Rule-3(2) and Rule-3(3).

(x). The Rule-3(5) of the Generation Rules stipulates the least cost option criteria necessary for the grant of generation licence 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/Wind Power Plant/Wind Farm against the preferences indicated by the Authority; (d). the cost and right-of-way considerations related to the provision of transmission and interconnection facilities; (e). the constraints on the transmission system likely to result from the proposed generation facility/Wind Power Plant/Wind 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/Wind Power Plant/Wind 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.

(xi). The Authority has observed that AEDB/GoP has identified two wind corridors (at 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 fifteen (15) projects with a cumulative installed capacity of around 790.00 MW have been installed and commissioned whereas another twenty-three (23) projects including that TWPPL with cumulative capacity of around 1250.00 MW are in various stages of implementation.

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(xii). 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. The Authority is of the considered opinion that wind is an indigenous RE resource and such resources have a preference for the energy security. It is pertinent to mention that TWPPL has already filed a petition for determination of tariff for the project for the consideration of the Authority suggesting a tariff of U.S. ¢ 7.0578/kwh. The Authority had already admitted the petition and the same is in advance stage of processing. In consideration of the falling prices of WTG and the better technology being deployed, it is very likely the tariff for the project will be very competitive.

(xiii). As explained in the preceding paragraphs, the sponsors of the project carried out the GIS which concludes that the project will not face any constraints in transmission system. Further, being located at reasonable distance from the thick population, the project will not result in cost and right-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 said, the Authority considers that the project of TWPPL fulfills the eligibility criteria for grant of generation licence as stipulated in the NEPRA Act, rules and regulations and other applicable documents.

(xiv). The Authority has considered the comments of the stakeholders and the rejoinder filed by TWPPL in the matter. The Authority considers that in order to reduce the cost of the projects and to involve local resources, the indigenization is very important. In this regard, TWPPL on the observations of EDB has confirmed that it will try to maximize the utilization of the indigenous resources. Regarding the observations of CPPAGL, the Authority has observed that NTDC has approved the GIS of the project confirming that the project is included in the expansion plan. In view of the above, the Authority considers that the comments of the above mentioned stakeholders stands duly addressed.

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(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 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 TWPPL 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 in reducing carbon emission by generating clean electricity, thus improving the environment.

(iv). As explained in the preceding paragraphs, TWPPL 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

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Authority has observed that Govt. of Sindh has allocated 347 acres of land to TWPPL 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 TWPPL to utilize the allocated land exclusively for the proposed generation facility/Wind Power Plant/Wind Farm and not to carry out any other generation activity on the said land except with its prior approval.

(v). The term of a generation licence under Rule-5(1) of the Generation Rules is required to match with the maximum expected life of the units comprised in a generation facility, except where an applicant for a generation licence consents to a shorter term. According to the information provided by TWPPL, its generation facility/Wind Power Plant/Wind Farm will achieve COD by June 30, 2020 and will have a useful life of more than twenty-five (25) years from its COD. In this regard, TWPPL has requested that the term of the proposed generation licence may be fixed as twenty-five (25) years. The Authority considers that said submission of TWPPL about the useful life of the generation facility/Wind Power Plant/Wind Farm and the subsequent request to fix the term of the generation licence is consistent with international benchmarks therefore, the Authority fixes the term of the generation licence to twenty-five (25) years from COD of the project subject to the provisions of Section-14B of the NEPRA Act.

(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 Article-6 of the generation licence directs TWPPL to charge the power purchaser only such tariff which has been determined, approved or specified by the Authority. The Authority directs TWPPL to adhere to the Article-6 of the generation licence in letter and spirit without any exception.

(vii). About the compliance with the environmental standards, as discussed in the preceding paragraphs, TWPPL has provided the NOC from

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EPAGoS and has confirmed that the project will comply with the required standards during the term of the generation licence. In view of the importance of the issue, the Authority has decided to include a separate article (i.e. Article-10) in the generation licence along with other terms and conditions making it obligatory for TWPPL to comply with relevant environmental standards at all times. Further, the Authority directs TWPPL to submit a report on a bi-annual basis, confirming that operation of its generation facility/Wind Power Plant/Wind Farm is in compliance with the required environmental standards as prescribed by the concerned environmental protection agency.

(viii). The proposed generation facility/Wind Power Plant/Wind Farm of TWPPL 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. TWPPL has informed that the project will achieve COD by June 30, 2020 which is within the deadline of the Kyoto Protocol. In view of the said, an article (i.e. Article-14) for carbon credits and its sharing with the power purchaser has been included in the generation licence. Accordingly, the Authority directs TWPPL to initiate the process in this regard at the earliest so that proceeds for the carbon credits are materialized. TWPPL shall be required to share the proceeds of the carbon credits with the power purchaser as stipulated in Article-14 of the generation licence.

(ix). The Authority observes that TWPPL applied for the grant of generation licence in terms of Section-15 of the NEPRA Act. However, NEPRA Act has been amended through Regulation of Generation, Transmission and Distribution of Electric Power (Amendment) Act, 2018 and Section-15 has been replaced with a new section i.e. Section-14B to provide for the grant of generation licences, therefore, the generation licence is being granted under Section-14B of the NEPRA Act.

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(x). In view of the above, the Authority hereby approves the grant of generation licence to TWPPL 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:

Himayat Ullah Khan
(Member)

Saif Ullah Chattha
(Member)

Rehmatullah Baloch
(Member/Vice Chairman)

Tariq Saddozai
(Chairman)

ON TOUR - Abroad

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National Electric Power Regulatory Authority (NEPRA)
Islamabad – Pakistan

GENERATION LICENCE

No. WPGL/54/2018

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

TRICOM WIND POWER (PVT.) LIMITED

Incorporated Under Section-32 of the Companies Ordinance 1984 (XLVII of 1984) Having Corporate Universal Identification No. 0092812, dated April 06, 2015

for its Generation Facility/Wind Farm/Wind Power Plant Located at 7/1 Deh Kohistan, Tapo Jhimpir, Taluka and District Thatta in the Province of Sindh

(Total Installed Capacity: 50.00 MW Gross ISO)

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

Given under my hand this on 8th day of August Two Thousand & Eighteen and expires on 29th day of June Two Thousand & Forty-Five.

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Registrar

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
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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 Alternative Energy Development Board or any other entity created for the like purpose established by the GoP to facilitate, promote and encourage development of renewable energy in the country;

(c). "Applicable Documents" mean the Act, the rules and regulations framed by the Authority under the Act, any documents or instruments issued or determinations made by the Authority under any of the foregoing or pursuant to the exercise of its powers under the Act, the Grid Code, the applicable Distribution Code, 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 for functioning as market operator;

(j). "Distribution Code" means the distribution code prepared by the concerned distribution company 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;

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

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(n). "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;

(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 **Tricom Wind Power (Pvt.) 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 any person or registered entity or licence holder which will be purchasing electric power from the Licensee, 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;

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.

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/Wind Power Plant/Wind Farm of the Licensee are set out in Schedule-I of this licence.

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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-five (25) years from the COD of the generation facility/Wind Power Plant/Wind Farm of the Licensee, subject to the provisions of Section-14(B) of the Act.

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

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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.

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.

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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.

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.

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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, IEEE standards 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 Facilities of the Licensee are described in this Schedule.

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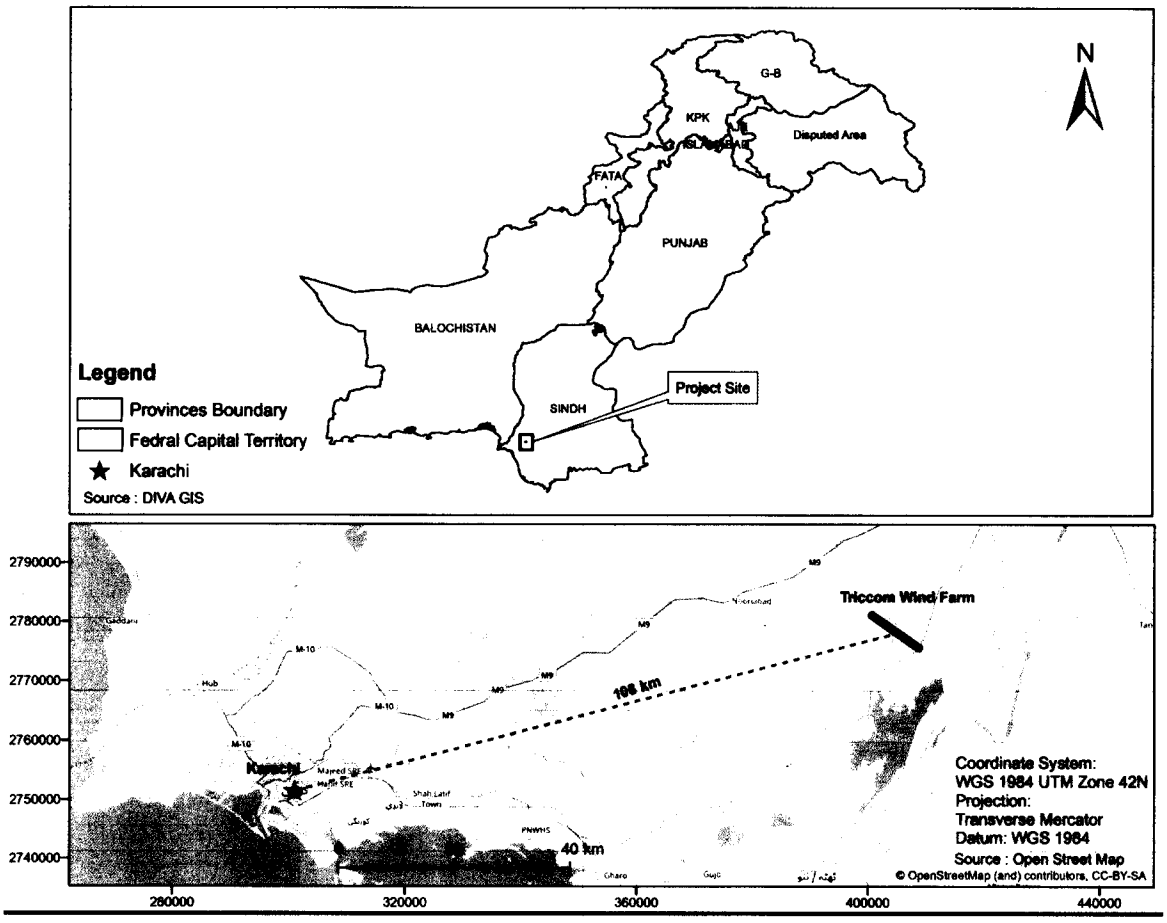
Location of the Generation Facility/Wind Power Plant/Wind Farm of the Licensee



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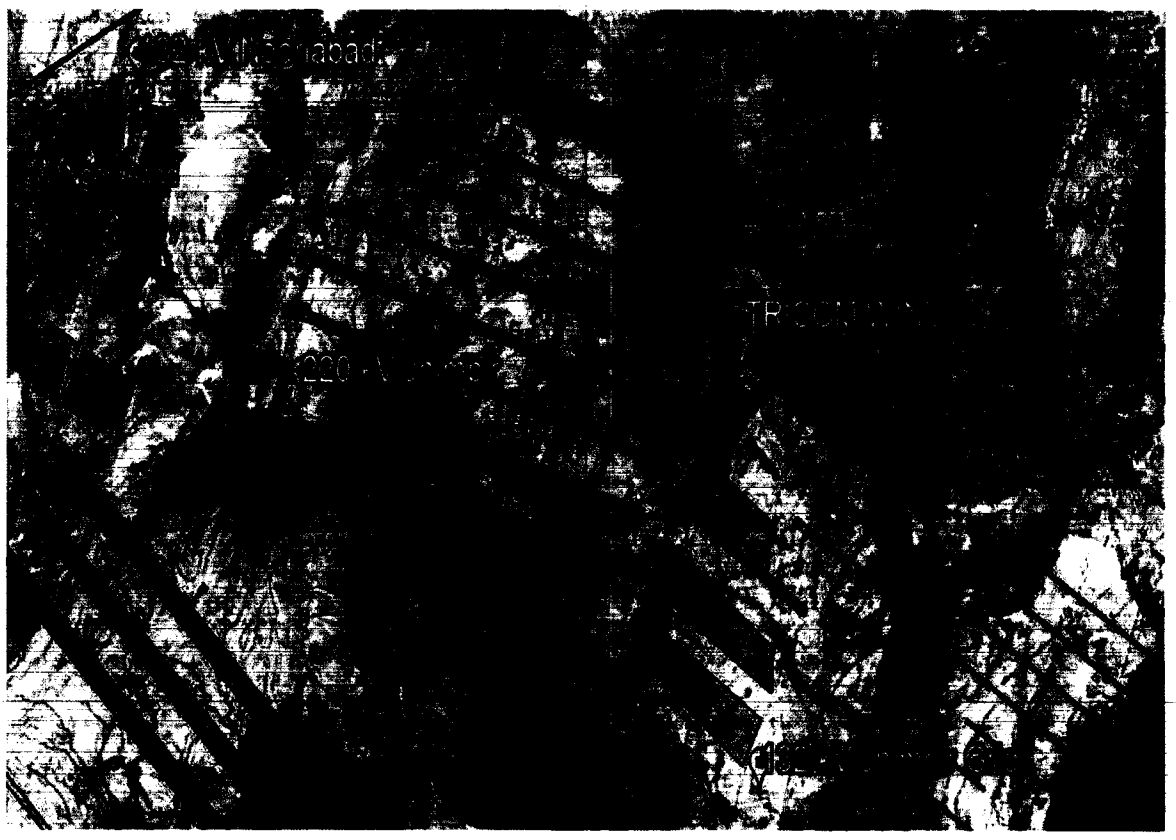
Location of the Generation Facility/Wind Power Plant/Wind Farm of the Licensee



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

Node	Longitude (East)	Latitude (North)
(1).	68° 0'52.73"E	25° 8'35.76"N
(2).	68° 0'50.19"E	25° 8'32.16"N
(3).	68° 5'41.07"E	25° 5'33.57"N
(4).	68° 5'44.10"E	25° 5'37.59"N

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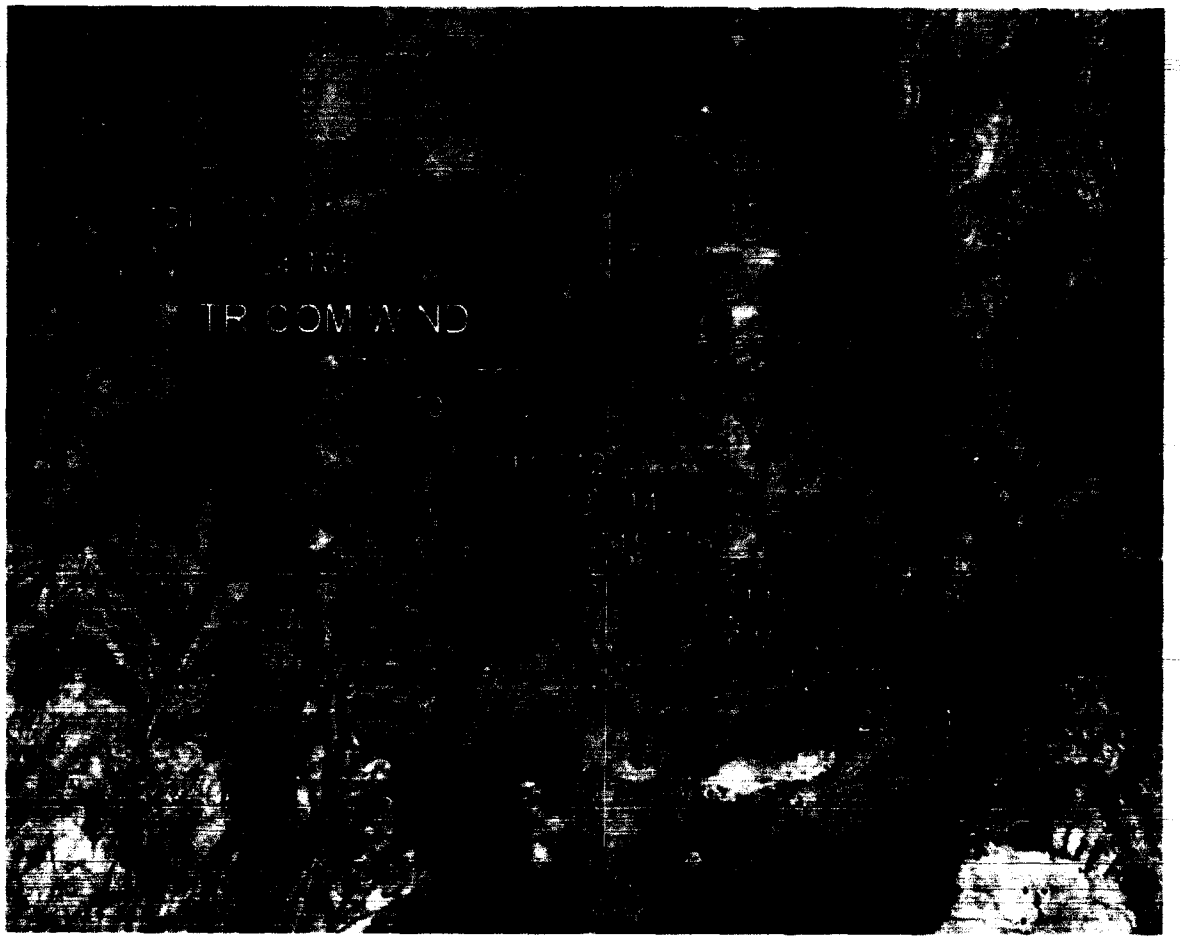
Micro-Sitting of the Generation Facility/Wind Power Plant/Wind Farm of the Licensee



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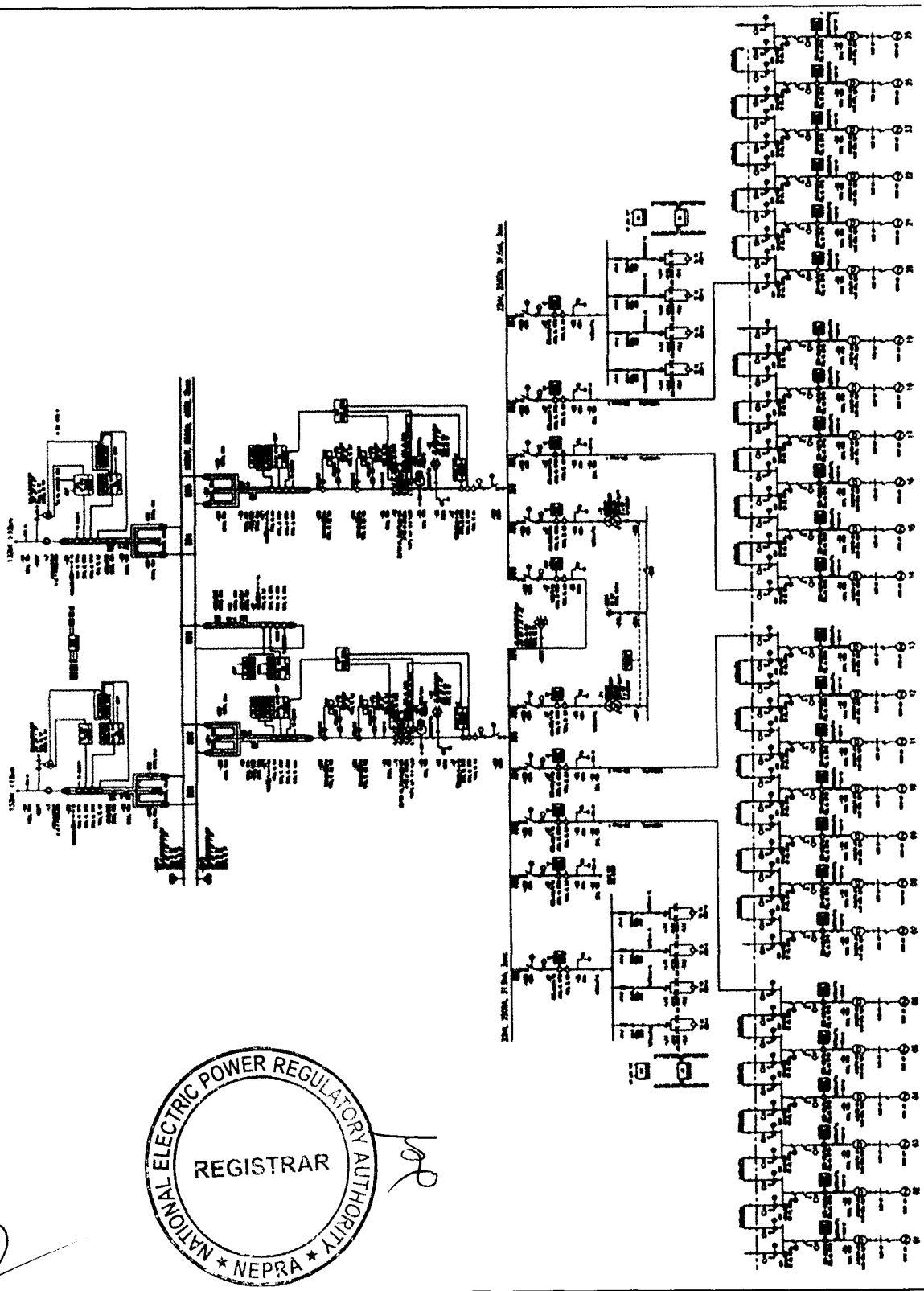
Single Line Diagram (Electrical System) of the Generation Facility/Wind Power Plant/Wind Farm of the Licensee



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Interconnection Facilities/ Transmission Arrangements for Dispersal of Electric Power from the Generation Facility/Wind Power Plant/Wind Farm

The electric power generated from the Generation Facility/Wind Power Plant/Wind Farm of the Licensee i.e. Tricom Wind Power (Pvt.) Limited (TWPPL) 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 will be on 132 KV voltage, consisting of a 132 kV D/C transmission line approximately 5.50 km in length (on AASC Greeley conductor) for making an In-Out of one circuit 132kV D/C transmission line between the WPPs/Projects of Norinco and Sinowell.

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

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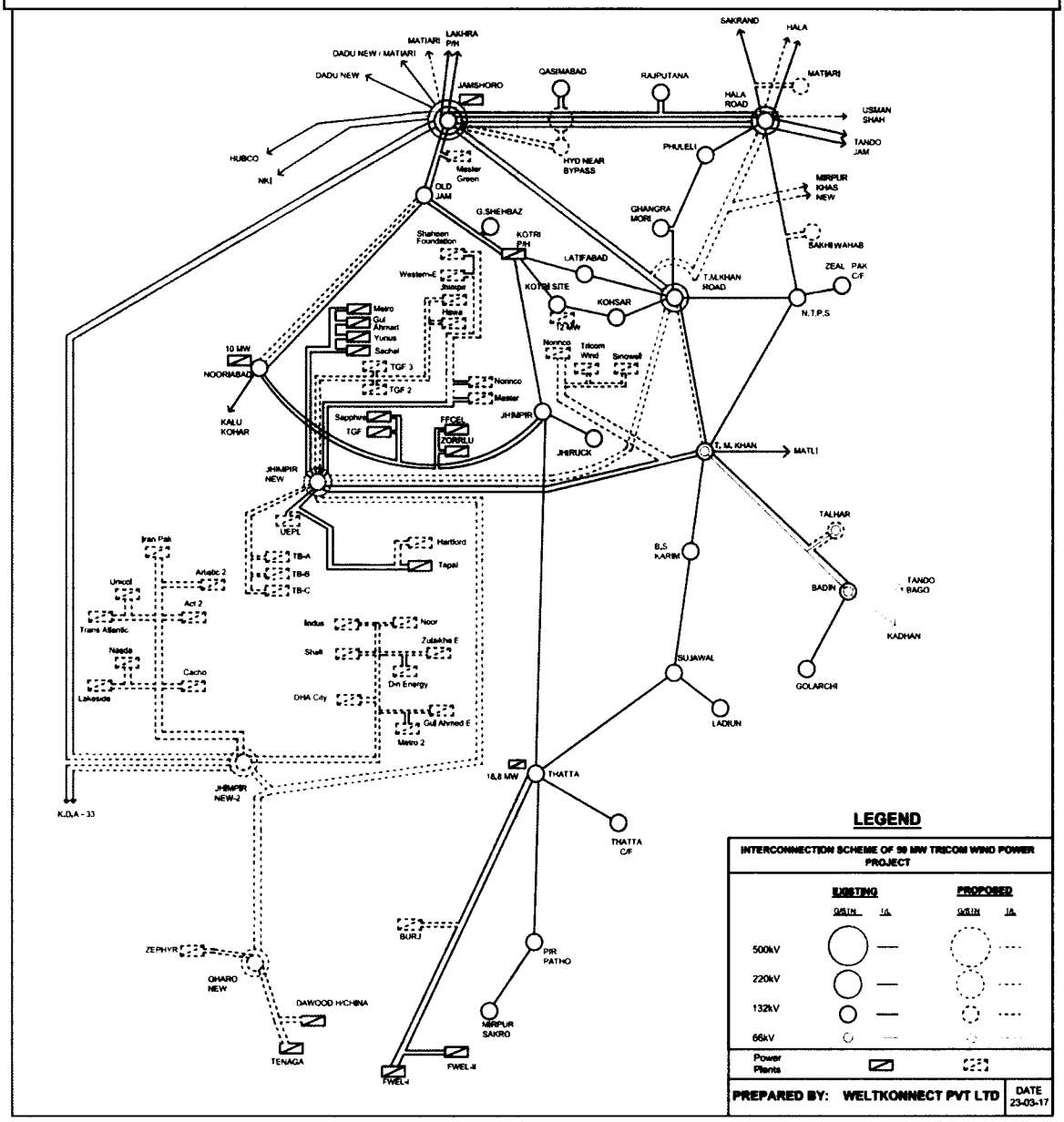
Schematic Diagram
for Interconnection Arrangement/Transmission Facilities for Dispersal of Electric Power from the Licensee



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Detail of Generation Facility/Wind Power Plant/ Wind Farm

(A). General Information

(i).	Name of Company/Licensee	Tricom Wind Power (Pvt.) Limited
(ii).	Registered Office of Company/Licensee	7-A, Tabba Street, Muhammad Ali Society, Karachi, in the Province of Sindh
(iii).	Business Office of Company/Licensee	-Do-
(iv).	Location of the generation facility/Wind Power Plant/Wind Farm	7/1 Deh Kohistan, Tapo Jhimpir, Taluka and District Thatta, in the Province of Sindh
(v).	Type of the generation facility/Wind Power Plant/Wind Farm	Wind Power

(B). Wind Farm Capacity & Configuration

(i).	Wind Turbine type, Make & Model	Gamesa G114-2.0 MW
(ii).	Installed Capacity of Wind Farm (MW)	50 MW
(iii).	Number of Wind Turbine Units/Size of each Unit (MW)	25 x 2.0 MW

(C). Wind Turbine Details

(a).	**Rotor**	
(i).	Number of blades	3
(ii).	Rotor diameter	114 m
(iii).	Swept area	10207 m^2
(iv).	Power regulation	Combination of blade pitch angle adjustment, and generator / converter torque control.
(v).	Cut-in wind speed	3 m/s

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(vi).	Cut-out wind speed	25 m/s
(vii).	Rated wind speed	13.07 m/s
(viii).	Survival wind speed	59.5 m/s (Maximum 3 sec)
(ix).	Pitch regulation	Electric motor drives a ring gear mounted to the inner race of the blade pitch bearing.
(b).	**Blades**	
(i).	Blade length	56 m
(ii).	Material	Composite material reinforced with fiberglass through resin infusion technology.
(c).	**Gearbox**	
(i).	Type	3 combined stages: 1 stage planetary, 2 parallel shift gears.
(ii).	Gear ratio	1:128.5
(iii).	Main shaft	Cast shaft
(d).	**Generator**	
(i).	Nominal Power	2040 (kVA)
(ii).	Voltage	690 V
(iii).	Type	Doubly fed with coil rotor and slip rings
(iv).	Degree of Protection	IP54 Turbine – IP21 Ring Body
(v).	Coupling	Main Shaft: Cone Collar, High Speed Shaft: Flexible coupling.
(vi).	Power factor	0.95
(e).	**Control System**	
(i).	Type	Automatic or manually controlled.
(ii).	Scope of monitoring	Remote monitoring of different parameters, e.g. temperature sensors, pitch parameters, speed, generator torque, wind speed and direction, etc.
(iii).	Recording	Production data, event list, long and short-term trends
(f).	**Brake**	
(i).	Design	Mechanical brakes
(ii).	Operational brake	Aerodynamic brake achieved by feathering blades.

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(iii).	Secondary brake	Mechanical brake on (high speed) shaft of gearbox.
(g).	**Tower**	
(i).	Type	Conical barrel tube
(ii).	Hub heights	93 m
(h).	**Yaw System**	
(i).	Yaw bearing	PETP
(ii).	Brake	Active Yaw
(iii).	Yaw drive	Motor Drive
(iv).	Speed	0.42/s controlling speed

(D). Other Details

(i).	COD of the generation facility/Wind Power Plant/Wind Farm	June 30, 2020 (anticipated)
(ii).	Minimum Expected Useful Life of the generation facility/Wind Power Plant/Wind Farm from COD	25 Years

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Power Curve
of Wind Turbine Generator (WTG) of Gamesa G114-2.0 MW (in Tabular Form)

3	29
4	135
5	319
6	581
7	943
8	1408
9	1804
10	1977
11	1993
12	1999
13	2000
14	2000
15	2000
16	2000
17	2000
18	2000
19	2000
20	2000
21	2000
22	1906
23	1681
24	1455
25	1230

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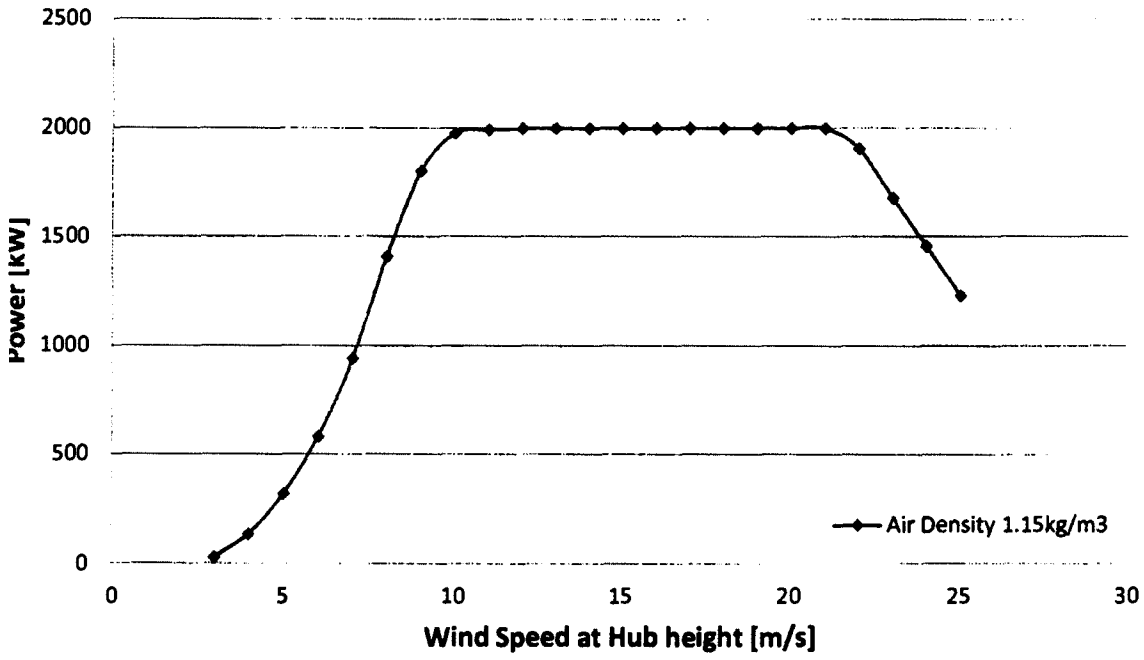
Power Curve
of Wind Turbine Generator (WTG) of Gamesa G114-2.0 MW (in Graphical Form)



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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 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 Power Plant/Wind Farm (MW/GWh)	50.00 MW
(2).	Total Annual Full Load Hours	3328.80
(3).	Average Wind Turbine Generator (WTG) Availability	95.00%
(4).	Total Gross Generation of the Generation Facility/Wind Farm (in GWh)	204.50 GWh
(5).	Array & Miscellaneous Losses GWh	21.60 GWh
(6).	Availability Losses GWh	09.65 GWh
(7).	Balance of Plant Losses GWh	06.75 GWh
(8)	Annual Energy Generation (25-year equivalent Net AEP) GWh	166.44 GWh
(9).	Net Capacity Factor	38.00 %

Note

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

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