National Electric Power Regulatory Authority
Islamic Republic of Pakistan

Registrar

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No. NEPRA/R/DL/LAG-399/ 9246-53

November 27, 2017

Brigadier (Retired) Tariq Izaz
Chief Operating Officer
Lakeside Energy (Private) Limited
B-21, Block 7/8, Banglore Town,
Main Shahrah-e-Faisal,
Karachi

Subject: **Generation Licence No. WPGL/53/2017**
Licence Application No. LAG-399
Lakeside Energy (Private) Limited (LEPL)

Reference: *Your letter No. nil, dated May 31, 2017.*

Enclosed please find herewith Determination of the Authority in the matter of Generation Licence Application of LEPL along with Generation Licence No. WPGL/53/2017 annexed to this determination granted by the National Electric Power Regulatory Authority to LEPL for its 50.00 MW Generation Facility/Wind Farm located at Deh Kohistan 7/3 & 7/4 Tapo Jungshahi, Taluka & District Thatta, Sindh, pursuant to Section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997).

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

Enclosure: **Generation Licence (WPGL/53/2017)**

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(Syed Safeer Hussain)

Copy to:

1. Secretary, Ministry of Energy (Power Division), 'A' Block, Pak. Secretariat, Islamabad.
2. Chief Secretary, Government of Sindh, Sind Secretariat, Karachi
3. Chief Executive Officer, Alternative Energy Development Board, 2nd Floor, OPF Building, G-5/2, Islamabad.
4. Chief Executive Officer, NTDC, 414-WAPDA House, Lahore
5. Chief Operating Officer, CPPA-G, Enercon Building, Sector G-5/2, Islamabad
6. Chief Executive Officer, Hyderabad Electric Supply Company (HESCO), WAPDA Water Wing Complex, Hussainabad, Hyderabad
7. Director General, Sindh Environmental Protection Agency, Plot No. ST 2/1, Sector 23, Korangi Industrial Area, Karachi

National Electric Power Regulatory Authority (NEPRA)

Determination of the Authority in the Matter of Application of Lakeside Energy (Pvt.) Limited for the Grant of Generation Licence

November 27, 2017
Case No. LAG-399

(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 potential investors. In this regard, 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. Energy Department of Government of Sindh (EDGoS) issued Letter of Intent (LoI) to Lakeside Energy (Pvt.) Limited (LSEPL) 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.

(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). LSEPL submitted an application on June 01, 2017 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 the same in substantial compliance with the Licensing Regulations. Accordingly, the case was submitted for the consideration of the Authority for admitting the application of LSEPL for further processing 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 June 16, 2017 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 June 20, 2017.

(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 June 20, 2017.

(C). Comments of Stakeholders

(i). In reply to the above, the Authority received comments from four (04) stakeholders. These included EDGoS, Pakistan Council of Renewable Energy Technologies (PCoRET), Anwar Kamal Law Associates (AKLA) and Ministry of Science and Technology (MoST). The salient points of the comments offered by the said stakeholders are summarized below: -

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(a). EDGoS explained the huge potential of the RE in the country especially in the province of Sindh and the benefits that can be achieved through the use of the same in generation of electric power. EDGoS supported the grant of generation licence to LSEPL;

(b). PCoRET in comments stated that it is not in a position to comment on the financial aspects of the project but has no objection to the grant of generation licence to LSEPL;

(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 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 under construction coal power projects. AKLA opined that instead of setting up new power plants having higher cost, efforts should be made to utilize the available generation capacity first to its full. Further, efforts should be made to encourage investors to set up new generation facilities under "Take and Pay" regime in a competitive power market. AKLA opposed the grant of generation licence to LSEPL; and

(d). MoST did not give any specific comments but instead endorsed the observations of PCoRET as explained above.

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(ii). The Authority reviewed the above comments of the stakeholders and decided to seek the perspective of LSEPL on the observations of AKLA. In reply to the said, LSEPL submitted that mainstreaming of RE and greater use of indigenous resources can help diversify energy mix of the country and reduce dependence on any single source, particularly imported fossil fuels, thereby mitigating against supply disruptions and price fluctuation risks. Additional costs and risks relating to fuel stocking, transportation, and temporary substitute arrangements are also irrelevant for RE systems, except for backup purposes. Further, LSEPL submitted that AKLA in its comments claimed that generation capacity of the country is surplus. It appears that AKLA is not fully aware about the operational and installed capacity. LSEPL stated that for instance the installed capacity of the hydro projects cannot operate at full load throughout the year as it is dependent on the hydrology. Furthermore, a sizeable portion of installed capacity is inefficient and not economically viable to be operated. Fuel prices are volatile and the same cannot be assumed to remain on the existing low level. Though there are projects under construction on coal and RLNG fuels, however, the ever increasing demand of electricity will continue to exist therefore, RE has to maintain a sizeable share in the overall energy mix. It is pertinent to mention that indigenous renewable sector will result in savings of precious foreign exchange. Presently, country has the lowest contribution of RE in the energy mix which needs to be improved to the level of other developing countries. Further to the said, it was stated that the comparison of earlier upfront tariffs with the current upfront tariff reveals the improvement of technology/plant factor and reduction in cost, these benefits are reflected in the current upfront tariff offered by the Authority. LSEPL explained that owing to the instability of the transmission line, the wind based generation facilities/Power Plants/Farms that are already in operation, are not able to supply the required 700 MW to the national grid, due to which a shortfall is being experienced. It was stated that comments of AKLA may be well intentioned but it depicts a fundamental lack of understanding of the dynamics involving a viable power policy. It was stated that most of the comments are directed towards the Authority and the RE Policy. The biggest concern expressed by AKLA is about the "Take or Pay" feature which AKLA suggests to be changed to "Take and Pay". It

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appears that AKLA does not seem to understand that replacing "Take or Pay" with "Take and Pay" will result in the end of private power industry in the country, which to date is the most successful in the country. LSEPL stated that the comments of AKLA may be rejected as the same are vague and irrelevant.

(iii). The Authority considered the above submissions of LSEPL on the observations of AKLA and 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 examined the submissions of LSEPL including the information provided in its application for the grant of generation licence. The Authority has also considered the feasibility study of the project, GIS, provisions of the RE Policy, the relevant rules & regulations.

(ii). The Authority has observed that the sponsors of the project include Naveena Exports Limited ("NEL") and Al Karam Textile Mills (Pvt.) Limited ("AKTM") each holding 50% of the shareholding in project company. NEL is one of the leading manufacturers of yarn and fabrics in the country and its clients include world leading brands like Levi's, GAP, next, JORDACHE and JCPenny. The total assets of NEL amounts to Pak Rs. 12.00 billion (approximate). NEL has set up captive power plants having a cumulative installed capacity of 23.50 MW operating on furnace oil and natural gas. The other sponsor AKTM was founded in 1986 as a vertically integrated textile mill having expertise in spinning, weaving, processing & printing, dyeing and stitching. It also owns and operates captive power plants with a total installed capacity of 32.00 MW. AKTM also has huge clients of foreign origin including Walmart, macy's IKEA, Carrefour and KOHL'S etc. The total assets of AKTM amounts to Pak Rs. 15.00 billion (approximate). In consideration of the said, the Authority is satisfied that sponsors have good financial and technical capability to develop the proposed project.

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(iii). 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 345 acres of land in the Jhimpir wind corridor at Deh Kohistan 7/3 & 7/4 Tapo Jungshahi, 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 sponsor has incorporated a SPV in the name of LSEPL under Section-32 of the Companies Ordinance, 1984 (Corporate Universal Identification No. 0089972, dated September 22, 2014). The registered/business office of the SPV is B-21, Block 7/8 Banglore Town, Main Shahrah-e-Faisal, 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.

(iv). As explained in the preceding paragraphs the sponsors have strong financial and technical background to carry out the project. In view of the said, various local and foreign financing institutions have expressed their willingness to fund the debt part of the project. According to the submitted information, the total outlay of the project will be U.S. $ 110.132 million which will be financed through a combination of debt (U.S. $ 82.599 million) and equity (U.S. $ 27.533 million) in a ratio of 75:25 which is in line with the benchmark set out in the RE Policy and the determinations of the Authority.

(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.

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(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 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 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. 4 km long, on twin bundled AASC Greeley conductor for making an In-Out of one circuit 132kV D/C transmission line from Nasda Green WPP to Jhimpir-2 grid station. In this regard, National Transmission and Despatch Company Limited (NTDC) has also

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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 LSEPL 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.

(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 LSEPL 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

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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 LSEPL with cumulative capacity of around 1250.00 MW are in various stages of implementation.

(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. It is pertinent to mention that wind is an indigenous RE resource and such resources 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, dated 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.

(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

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capacity requirements. In view of the said, the Authority considers that the project of LSEPL 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 LSEPL in the matter. It has been observed that AKLA has made certain observations including (a). underutilization/availability of surplus capacity of existing power plants in the system; (b). setting up of new power plants on "Take or Pay" basis; (c). must run condition for RE based power plants; (d). higher upfront tariff for RE power plants; and (e). induction of new projects whereas the demand is likely to reduce in future due to new initiatives of "Net Metering" and "Wheeling".

(xv). In consideration of the above, the Authority has observed that AKLA has been raising these issues on a consistent basis. In this regard, a comprehensive reply on the issues of (a). underutilization of plants; (b). capacity payment without taking electricity from power plants; and (c). addition of RE project having high tariff was sent to AKLA through letter no. NEPRA/SAT-I/TRF-100/7060, dated December 27, 2016. The Authority reiterates its earlier findings and observations given in the aforementioned letter in the matter and is of the considered opinion that in fact there is considerable supply demand gap resulting in load-shedding and load management. The aforementioned is strengthened from the fact that the proposed generation facility/Wind Power Plant/Wind Farm of LSEPL is included in the future expansion plan of NTDC. Regarding the observations of AKLA that RE Projects should have "Take and Pay" tariff, the Authority hereby clarifies that through its determination No. NEPRA/TRF-WPT/2017/1542-1544, dated January 27, 2017 it has already determined a benchmark tariff for future wind power projects which is on unit delivered basis meaning thereby that a power producer/generation company is paid only for the energy it delivers.

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(xvi). In addition to the above, the Authority will like to give its further findings on the other observations of AKLA in the following paragraphs. AKLA has raised the issue of under-utilization of power plants and availability of surplus energy in the system. In this regard, the Authority has observed that AKLA has assumed the utilization of the dependable capacity for each of the power plant to the tune of 100% which is practically not possible. A power plant is required to undergo routine as well as forced outages due to which power plant cannot operate with 100% capacity and plant factor. Further, there are a number of other constraints which affect the plant factor of a power plant including fuel constraints, load requirements, transmission system constraints and system disturbances etc. The Authority continuously monitors the situation and also seeks clarification and reasons of underutilization from licensees, if required. In this regard, a number of advisories and legal actions had been taken in the past for the effective utilization of the available generation resources. However, it is worth mentioning that the Authority cannot indulge itself in the routine operational matters of the licensees and has directed National Power Control Center (NPCC) of NTDC for optimal utilization of available generation capacity. Further, on a number of occasions NPCC has also confirmed that maximum generation is being obtained from all the power plants based on their availability, the fuel constraints and the load requirements.

(xvii). The Authority has observed that AKLA has been very critical of allowing setting up of new power plants on "Take or Pay" basis. In this regard, the Authority would like to highlight that in order to attract investment of private parties in the power sector of the country, GoP has formulated various power policies where various incentives have been allowed to the investor. Almost all the announced power policies including currently in vogue, allow a two-part tariff structure with the option of take or pay. This has been done to make the projects bankable which is otherwise not possible due to prevailing situation of the power sector of the country. About the observations of AKLA for granting "Must Run" condition for RE based power plants, the Authority

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considers that in order to encourage the development of the RE projects the GoP formulated the RE Policy, in which various incentives were offered to the prospective investors for making the RE projects attractive for investment and bankability. One of the incentive of the said RE Policy was that the utilities would be obligated to buy all the offered electricity from the RE project. In view of the said, the Authority considers that the Must Run status being offered to the RE based Power Plants is completely in line with the RE Policy. In this regard, the Authority is of the considered opinion that the incentives given in the RE Policy has brought fruit and now the country has significant foot print in the RE sector which is considered very important in today's world. About the observations of AKLA that new initiatives of "Net Metering" and "Wheeling" will result in reduction of future demand therefore, new project may not be set up, the Authority is of the considered opinion that the said initiatives are in their stage of infancy with a very little foot print. The Authority is of the considered opinion that the new initiatives of "Net Metering" and "Wheeling" have still to achieve a critical mass before it actually starts impacting the demand side. In view of the above, the Authority considers that the relevant observations of AKLA stands suitably addressed.

(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

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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 LSEPL 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, LSEPL 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 Govt. of Sindh has allocated 345 acres of land to LSEPL 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 LSEPL 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 LSEPL, its generation facility/Wind Power Plant/Wind Farm will achieve COD by March 31, 2020 and will have a useful life of more than twenty-five (25) years from its COD. In this regard, LSEPL has requested that the term of the proposed generation licence may be fixed as twenty-five (25) years. The Authority considers that said

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submission of LSEPL 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.

(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 LSEPL to charge the power purchaser only such tariff which has been determined, approved or specified by the Authority. The Authority directs LSEPL 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, LSEPL has provided the NOC from 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 LSEPL to comply with relevant environmental standards at all times. Further, the Authority directs LSEPL 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 LSEPL 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. LSEPL has informed that the project will achieve COD by March 31, 2020 which is within the deadline of the Kyoto Protocol. In view of the said, an

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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 LSEPL to initiate the process in this regard at the earliest so that proceeds for the carbon credits are materialized. LSEPL 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). In view of the above, the Authority hereby approves the grant of generation licence to LSEPL 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:

Maj. (R) Haroon Rashid
(Member)

Syed Masood-ul-Hassan Naqvi
(Member)

Himayat Ullah Khan
(Member)

Saif Ullah Chattha
(Member/Vice Chairman)

23.11.2017

Tariq Saddozai
(Chairman)

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National Electric Power Regulatory Authority
(NEPRA)
Islamabad – Pakistan

GENERATION LICENCE

No. WPGL/53/2017

In exercise of the powers conferred upon under Section-15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, the Authority hereby grants the Generation Licence to:

LAKESIDE ENERGY (PVT.) LIMITED

Incorporated Under Section-32 of the Companies Ordinance 1984 (XLVII of 1984) Having Corporate Universal Identification No. 0089972, dated September 22, 2014

for its Generation Facility/Wind Farm/Wind Power Plant Located at Deh Kohistan 7/3 & 7/4 Tapo Jungshahi, Taluka & 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 27th day of November Two Thousand & Seventeen and expires on 30th day of March Two Thousand & Forty Five.

27/11/17

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 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;

(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;

(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 **Lakeside Energy (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;

(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;

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(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.

Article-2
Applicability of Law

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

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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-five (25) 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.

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

Sr. No.	Latitude	Longitude
1.	25° 2'16.30"N	67°42'2.78"E
2.	25° 2'20.18"N	67°42'6.13"E
3.	24°58'44.80"N	67°45'53.97"E
4.	24°58'47.67"N	67°45'58.23"E

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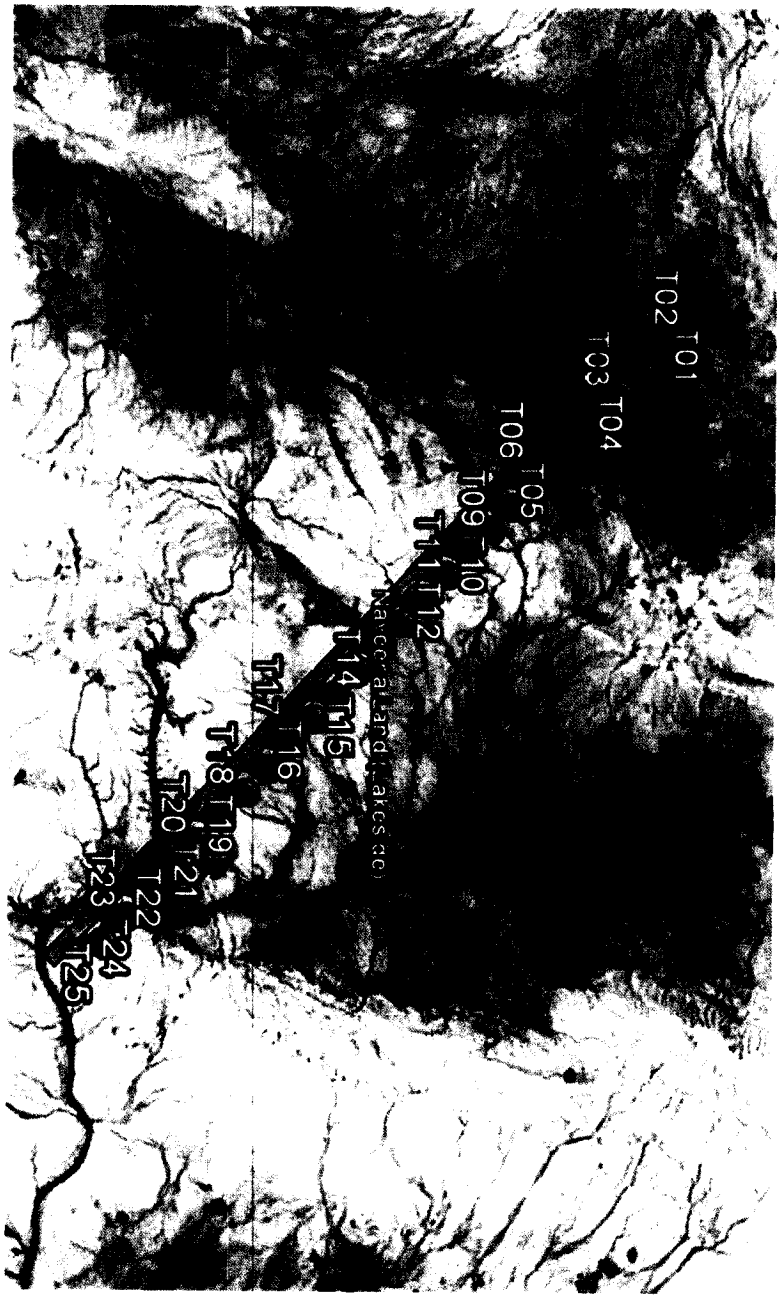
Layout of the Generation Facility/Wind Power Plant/Wind Farm of the Licensee



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

Turbine No.	Coordinates (UTM Z42 WGS84)	
	Easting [m]	Northing [m]
Lakeside_G01	369033.419	2769769.961
Lakeside_G02	369272.469	2769525.382
Lakeside_G03	369511.52	2769280.802
Lakeside_G04	369750.57	2769036.223
Lakeside_G05	370467.721	2768302.486
Lakeside_G06	370706.771	2768057.906
Lakeside_G07	370945.821	2767813.327
Lakeside_G08	371184.871	2767568.748
Lakeside_G09	371423.922	2767324.169
Lakeside_G10	371662.972	2767079.59
Lakeside_G11	371902.022	2766835.01
Lakeside_G12	372141.072	2766590.431
Lakeside_G13	372380.122	2766345.852
Lakeside_G14	372619.173	2766101.273
Lakeside_G15	372858.223	2765856.694
Lakeside_G16	373097.273	2765612.114
Lakeside_G17	373336.323	2765367.535
Lakeside_G18	373575.374	2765122.956
Lakeside_G19	373814.424	2764878.377
Lakeside_G20	374053.474	2764633.798
Lakeside_G21	374292.524	2764389.218
Lakeside_G22	374531.575	2764144.639
Lakeside_G23	374770.625	2763900.06
Lakeside_G24	375009.675	2763655.481
Lakeside_G25	375248.725	2763410.902

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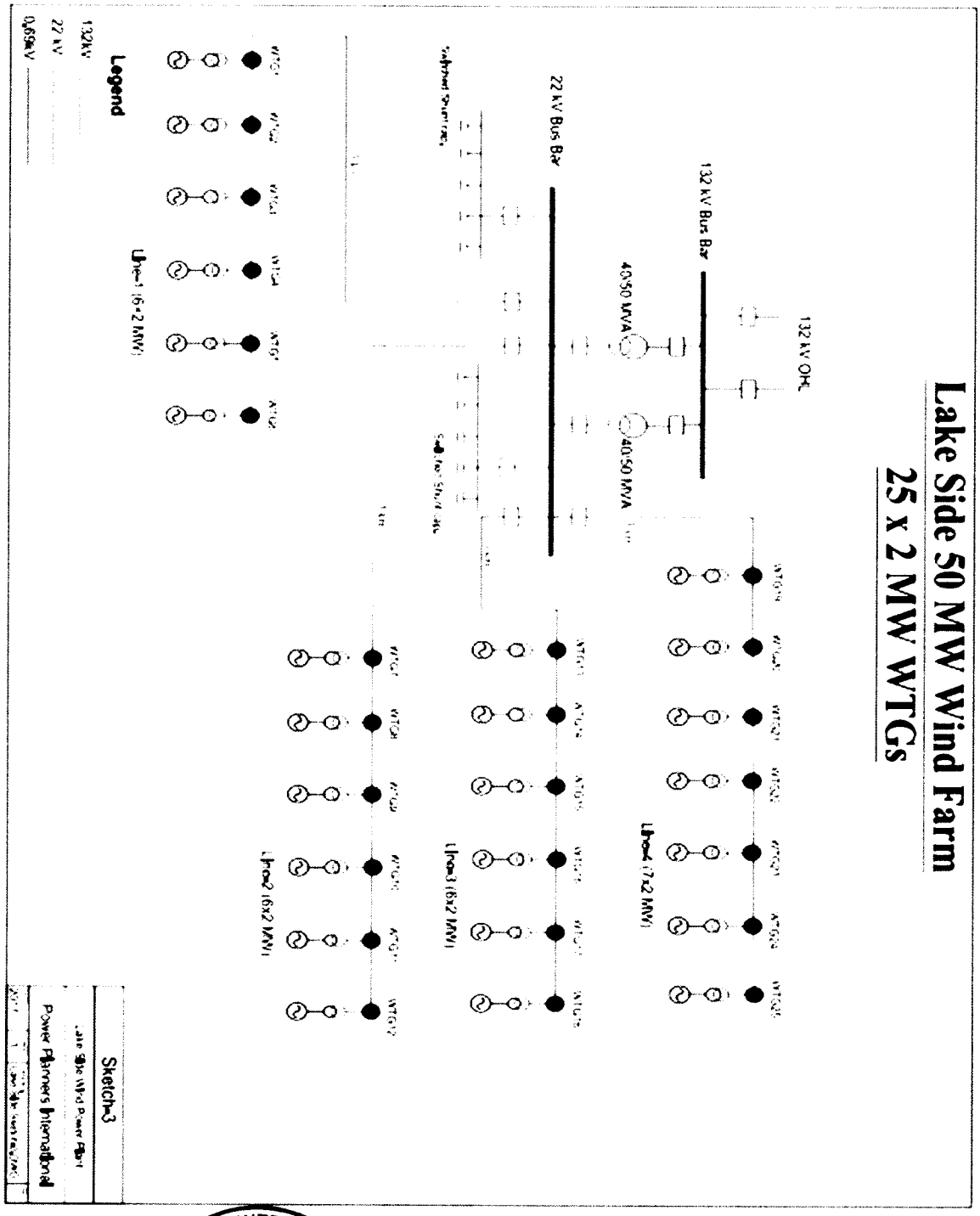
Single Line Diagram (Electrical System) of the Generation Facility/Wind Power Plant/Wind Farm of the Licensee



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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. Lakeside Energy (Pvt.) Limited (LSEPL) 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 LSEPL considers certain reinforcement consisting of the following: -

(i). 220 kV D/C transmission line approx. 5km long on twin bundled Greeley conductor looping In/out of second circuit of existing Jamshoro – KDA-33 D/C transmission line at the proposed 220/132 kV substation of Jhimpir-2;

(ii). Addition of 4th 220/132 kV transformer at the newly proposed above mentioned 220/132 kV substation Jhimpir-2;

(iii). A 132kV Double Circuit (D/C) transmission line approx. 135 km long on twin bundled AASC Greeley conductor for connecting eight (08) Wind Power Plants (WPPs) in the first loop to 220/132 newly proposed substation Jhimpir-2;

(iv). A 132kV D/C transmission line approx. 168 km long on twin bundled AASC Greeley conductor for connecting another eight (08) WPPs in the second loop to 220/132 newly proposed substation Jhimpir-2.

(3). In the above scheme the interconnection for the generation facility/WPP of LSEPL includes 132 kV D/C transmission line approximately 4.00 km in length on AASC Greeley conductor for making in/out of one circuit of 132kV D/C from Nasda Green WPP to Jhimpir-2 grid station.

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(4). 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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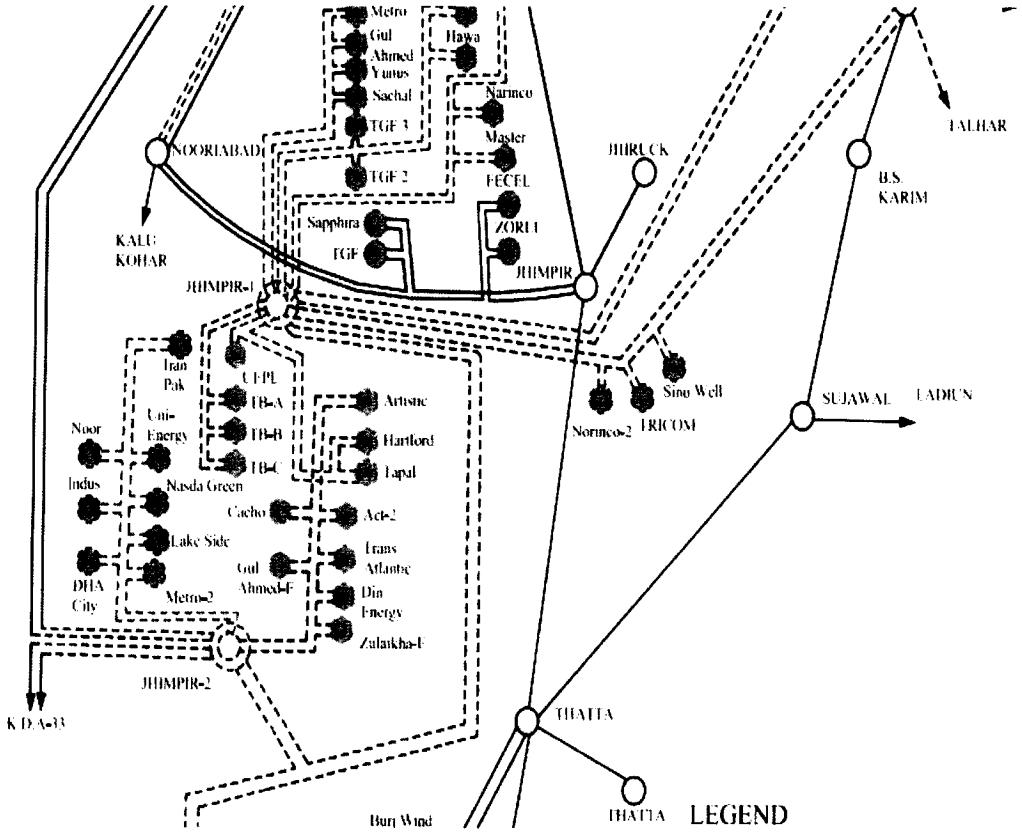
Schematic Diagram
for Interconnection Arrangement/Transmission Facilities for Dispersal of Electric Power from the Licensee



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Detail of Generation Facility/Wind Power Plant/ Wind Farm

(A). General Information

(i).	Name of Company/Licensee	Lakeside Energy (Pvt.) Limited
(ii).	Registered Office of Company/Licensee	82-C/1 Gulberg-III, Lahore, in the province of Punjab
(iii).	Business Office of Company/Licensee	-Do-
(iv).	Location of the generation facility/Wind Power Plant/Wind Farm	Deh Kohistan 7/3 & 7/4 Tapo Jungshahi, Taluka & 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

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(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
(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.

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(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.
(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	March 31, 2020 (anticipated)

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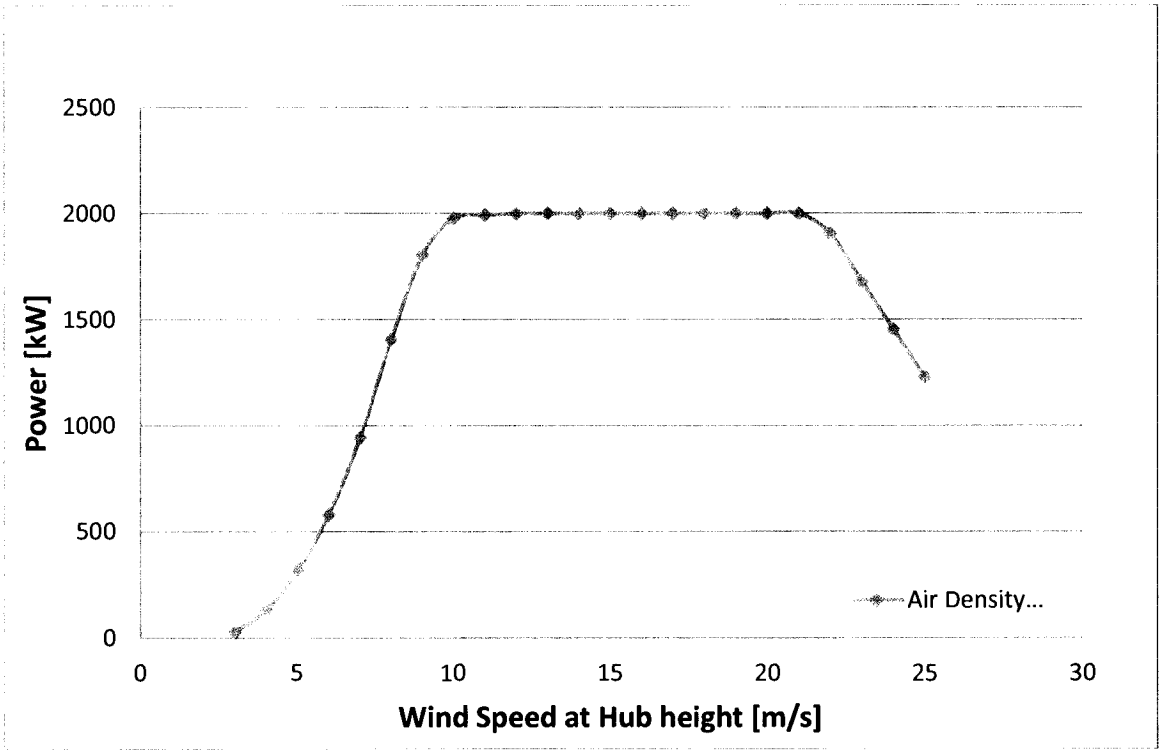
Power Curve
of Wind Turbine Generator (WTG) of Gamesa G114-2.0 MW (in Graphical Form)



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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	97.00%
(4).	Total Gross Generation of the Generation Facility/Wind Farm (in GWh)	186.88 GWh
(5).	Array & Miscellaneous Losses GWh	12.58 GWh
(6).	Availability Losses GWh	4.72 GWh
(7).	Balance of Plant Losses GWh	3.14 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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