National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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Registrar

No. NEPRA/DG(Lic)/LAG-354/ 16462-68

October 30, 2024

Mr. Tabish Tapal
Chief Executive Officer
Western Energy (Private) Limited
F-25, Block-5, Rojhan Street
Kehkashan, Clifton, Karachi

Subject: **Modification in Generation Licence No. WPGL/37/2017 (Modification-I)**
Licence Application No. LAG-354
WESTERN ENERGY (PRIVATE) LIMITED

Reference: WEPL's LPM submitted vide letter No. WEL/NEPRA/001/23 dated 12.01.2023

It is intimated that the Authority has approved Modification-I in Generation Licence No. WPGL/37/2017 dated January 05, 2017 of Western Energy (Private) Limited pursuant to Section 26 of the NEPRA Act read with Regulation 10(11)(a) of the NEPRA Licensing Regulations.

2. Enclosed please find herewith Determination of the Authority in the matter of Licensee Proposed Modification of WEPL alongwith Modification-I in the Generation Licence No. WPGL/37/2017, approved by the Authority.

Enclosure: As Above

Wasim Anwar

(Wasim Anwar Bhinder)

Copy to:

1. Secretary, Power Division, Ministry of Energy, 'A' Block, Pak Secretariat, Islamabad
2. Managing Director, Private Power & Infrastructure Board (PPIB), Ground & 2nd Floors, Emigration Tower, Plot No. 10, Mauve Area, Sector G-8/1, Islamabad
3. Managing Director, NTDC, 414 WAPDA House, Lahore
4. Chief Executive Officer, CPPA(G), 73 West, A.K. Fazl-ul-Haq Road, Blue Area, Islamabad
5. Chief Executive Officer, Hyderabad Electric Supply Company (HESCO), HESCO Headquarter WAPDA Complex, Hussainabad, Hyderabad
6. Director General, Environmental Protection Department, Government of Sindh, Plot No ST2/1, Sector 23, Korangi Industrial Area, Karachi

National Electric Power Regulatory Authority (NEPRA)

Determination of the Authority in the Matter of Licensee Proposed Modification in the Generation Licence of Western Energy (Pvt.) Limited

October 30th, 2024
Case No. LAG-354

(A). Background

(i). In terms of Section-15 (now Section-14B) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the "NEPRA Act"), the Authority granted a Generation Licence (No. WPGL/37/2017 dated January 05, 2017) to Western Energy (Pvt.) Limited (WEPL) for its 50.0 MW generation facility/Wind Power Plant (WPP) to be located at Nooriabad, Jhimpir, District Thatta, in the Province of Sindh.

(ii). According to the above Generation Licence, the generation facility/WPP of WEPL was proposed to consist of 25x2.0 MW Wind Turbine Generators (WTGs) of Haizhuang Windpower (H111-2.0 MW) with the hub height of the tower restricted to 80 m. Further, the term of the Generation Licence was fixed for twenty (20) years from the then anticipated Commercial Operational Date (COD) of the generation facility/WPP (i.e. July 31, 2019).

(B). Communication of Modification

(i). WEPL in accordance with Regulation-10 of the NEPRA Licensing (Application, Modification, Extension, and Cancellation) Procedure Regulations, 2021 (the "Licensing Regulations"), communicated a Licensee Proposed Modification (LPM) in its existing Generation Licence on January 17, 2023.

(ii). In the "text of the proposed modification", WEPL proposed the following: (a). change in the WTG technology from Haizhuang (H111-2.0 MW) to Goldwind GW140-3.4 MW; (b). change in the installed capacity (50.0 MW) and number/size of WTG (25x2.0) to 47.60 MW based on 14x3.4MW WTGs; (d). change in the net capacity factor from 40.47% to 38%; and (e). change in the life of the project from 20 to 25 years.

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(iii). Regarding the "statement of the reasons in support of the modification", WEPL, *inter alia*, stated that: (a). the Chinese Partner was also the WTG supplier and as per the yield assessment, the H111-2.0 was not able to achieve a capacity factor of 38% as allowed by NEPRA. Hence, the Chinese Partner decided to withdraw from the Project as an equity investor, WTG supplier, and EPC contractor. Thereafter, based on a new wind resource assessment study the WTG of Goldwind (GW140-3.4 MW) is being considered as most suitable for the project; (b). the change in WTG technology will change the capacity factor to 38%, as determined by NEPRA in the previous tariff determination. (c). the proposed WTG(s) of Goldwind is bigger but fewer in numbers resulting in a reduction in installed capacity from 50 MW to 47.6 MW; (d). the proposed change in the expected useful life from 20 years to 25 years is based on the tariff determination of the company and other recent wind power tariff determinations, wherein the Authority has determined project life and tariff control period of 25 years.

(iv). About the "statement of the impact on the tariff, quality of service and the performance by the Licensee of its obligations under the license", WEPL has, *inter alia*, stated that the proposed change in the technology, WTG will result in a reduction in levelized cost of energy/tariff. The change of WTGs from H111-2.0 MW to Goldwind GW140-3.4 MW is because the H111-2.0 was not able to achieve the approved capacity factor (38%) due to height restrictions at the project site. The revised capacity factor requested in this modification is the same as the Authority has determined, meaning thereby it will have no impact on tariff. Further, the proposed modification/change in the WTG technology will have a positive impact on the quality of service and the performance by the Licensee of its obligations under the licence. In this regard, it is pertinent to mention that Goldwind is a global leader in clean energy, energy conservation, and environmental protection. Furthermore, Goldwind has a strong presence globally as well as in Pakistan.

(C). Processing of LPM

(i). After completion of all the required information as stipulated under Regulation-10(1) and 10-(2) of the Licensing Regulations, by WEPL, the Registrar under Regulation 10-(3) of the Licensing Regulations published the communicated LPM on February 03, 2023, in one (01) English and one (01) Urdu newspaper, informing the general public about the communicated LPM and inviting their comments within fourteen (14) days from the date of the said publication.

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(ii). Apart from the above, separate letters were also sent to various other stakeholders including Government Ministries and their attached departments, various representative organizations, individual experts, and others on February 06, 2023. Through the said letters, the stakeholders were informed about the communicated LPM and the publication of its notice in the press. Further, the said entities were invited to submit their views and comments on the matter, for the assistance of the Authority.

(D). Comments of Stakeholders

(i). In response to the above notices, this Authority received comments from the Power Division, Ministry of Energy (PDMoE) only. In its comments, it was submitted that WEPL has decided to increase the rating of WTGs from 2.0 MW to 3.4 MW and reduce the capacity factor from 40.47% to 38%. The reduced capacity factor may have financial implications and shall not be beneficial for the end consumers. Therefore, the capacity factor may be assessed while considering/utilizing standard globally recognized software and by analyzing wind resource and energy yield assessment reports by 3rd party. In view of the said, it is suggested to consider a higher capacity factor than WEPL has proposed/requested.

(ii). The Authority examined the above comments of PDMoE and considered it appropriate to seek the perspective of WEPL on the same. In response, WEPL submitted that the comments of PDMoE about the increase of capacity factor and its assessment through a third party are general in nature. WEPL stated that the land allocated for the project is in close vicinity of the PAF Bholari Airbase, therefore selection and micrositing of the WTGs is limited due to the restriction of height that PAF has allowed.

(iii). Also, the requested capacity factor of 38% is the same that the Authority had determined in its various tariff determinations for other similar projects in the vicinity. WEPL stressed that despite these limitations due to its location near the Airbase, it is still considering the capacity factor of 38%, which otherwise is less likely to be achieved as per the wind resource assessment report of the consultant. In this regard, WEPL referred to its letter to AEDB, wherein it is explained in detail concerning the aggressive approach to the capacity factor of the project. Consequently, AEDB being the qualified and competent department has approved the feasibility study of the project. The capacity factor approved by AEDB for the projects in the last instances was never 41% as mentioned in the letter of PDMoE.

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(iv). WEPL remarked that the achievement of optimal energy yield/capacity factor is the prime driver for the selection of WTG technology for the project together with its cost. Apart from these, there are various other criteria and after thorough exercise, the WTGs for the project have been selected. In this regard, a comparison of various WTGs has been considered for the project. Due to height restrictions, the available options for WTGs were limited. So after a detailed analysis based on the mentioned factors, the project company has selected Goldwind 14 x GW140-3.4MW with 80 m hub height which has an optimal capacity factor considering the site conditions.

(v). WEPL submitted that according to its understanding and seen from publicly available generation data of wind IPPs, the overall trend (except a very few and occasional instances) is that the projects are not generating higher than their approved capacity factors including the latest projects which have received 38% in their respective tariff determinations. The regime must be considered wherein the risk of generating power remains with the project. In the event that such a high capacity factor would not be achieved, the entire loss will fall upon the project. On the other hand, it is very important to recognize and consider the fact that if the actual capacity factor is higher than the one approved, the upside heavily goes to the Purchaser as per the prevailing regime, hence producing a lower net tariff.

(vi). Further to above, it was commented that the wind resource assessment of the project has been carried out by a third-party qualified consultant, using standard industry software and prudent techniques. Therefore, the concerns of PDMoE regarding performing these assessments stand addressed. WEPL also agreed to appoint an independent third party (if so desired by the Authority) provided that a complete and fair mechanism is chalked out such as; (i). appointment of a recognized third party with the consent of the project company, (ii). an upfront agreement that the capacity factor assessed by that independent third party would be made part of the tariff determination and the Energy Purchase Agreement (EPA), (iii). an upfront agreement that an adjustment in the tariff will be permitted in the EPA every such year where such approved capacity factor would not be achieved during operations due to reasons not attributable to the performance of WTGs.

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

(E). Evaluation/Findings

(i). The Authority has examined the entire case in detail, including the already granted Generation Licence, the communicated LPM, relevant provisions of the Policy for Development of Renewable Energy for Power Generation 2006 (the "RE Policy"), provisions of the NEPRA Act and relevant rules & regulations framed thereunder.

(ii). In this regard, the Authority has observed that originally it granted a Generation Licence (No. WPGL/37/2017 dated January 05, 2017) to WEPL for setting up a 50.0 MW generation facility/WPP at Nooriabad, Jhimpir, District Thatta, in the Province of Sindh. As per decisions of the Cabinet Committee on Energy (CCoE), the project of WEPL falls under Category-II of the RE projects, and all Category-II projects are allowed to proceed ahead towards the achievement of their requisite milestones as per the RE Policy. Further, all Category-II projects are included in the approved IGECP as committed projects.

(iii). As per the existing Generation Licence, the generation facility/WPP of WEPL was proposed to consist of 25x2.0 MW WTGs of Haizhuang Windpower (H111-2.0 MW) with a hub height of 80m. Further, the term of the Generation Licence was set to twenty (20) years from the then anticipated COD of the generation facility/WPP of WEPL (i.e. July 31, 2019). Later on, WEPL communicated an LPM in its Generation Licence on December 15, 2020, for: (a). changing the WTG technology from Haizhuang (H111-2.0 MW with a tower hub height of 80m) to General Electric (GE 2.5-132 with a tower hub height of 94m); and (b). increase the term of Generation Licence from twenty (20) years to twenty-five (25) years, and change in capacity factor from 40.47% to 38% (as was approved in the tariff determination of WEPL). The Authority approved the proposed modification and issuance of the approved modification was made subject to the provision of NOC/clearance from PAF Bolari Airbase with respect to the proposed hub height of the towers (i.e. 94m). However, despite the lapse of a considerable period, WEPL failed to provide the required NOC/clearance. Accordingly, the said LPM was rejected by the Authority.

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(iv). Now through the current LPM in its Generation Licence, WEPL has proposed to: (a). change the WTG technology from the existing Haizhuang (H111-2.0 MW) to Goldwind GW140-3.4 MW; (b). decrease the installed capacity from 50.0 MW to 47.60 MW; (c). change number/size of WTG from 25x2.0 MW to 14x3.4 MW; (d). change the net capacity factor from 40.4% to 38%; and (e). change the project life from 20 years to 25 years.

(v). Regarding the proposed WTG technology of Goldwind, the Authority has observed that Goldwind is a global leader in clean energy, energy conservation, and environmental protection. Goldwind is a key player in promoting energy transformation to attain access to affordable, reliable, and sustainable energy for all, and to drive a renewable future. Specializing in wind power and environmental protection, Goldwind leverages strong scientific research, innovation, and best business practices to uplift renewable energy utilization efficiency. Goldwind has a strong presence globally with more than 115 GW installed capacity and an operations and maintenance service capacity exceeding 64GW.

(vi). Regarding ascertaining that the proposed WTG is the optimal technology that is currently available in the market, the Authority has noted that WEPL while conducting due diligence on the optimal WTG for the project, evaluated different WTGs of leading manufacturers including: (a). Goldwind (GW140-4.5MW HH:80m); (b). Goldwind (GW140-3.4MW HH:80m); (c). Goldwind (GW121-2.5MW HH:90m); (d). Siemens Gamesa (SG145 - 5.0MW, HH 90m); (e). General Electric (GE 168-6.1 MW HH:101m); (f). General Electric (GE 116-2.0MW HH:94m); (g). Vestas (V150-4.5 MW, HH 90m); (h). Vestas (V126-3.45 MW, HH: 137m); and (i). Siemens Gamesa (SG-114-2.0MW, HH 93m).

(vii). The main aspects considered for the selection of the WTG Model were based on the criteria of: (a). Permissible height and coordinates due to Bholari Airbase; (b). Total height of WTG; (c). WTG suitability for the site; (d). Experience, expertise, and financial strength of WTG manufacturer; (e). Quality of WTG and Type Certification according to site suitability; (f). Quality and certifications of Electrical Balance of Plant (EBOP) equipment; (g). Ultimate energy yield potential for the project; (h). Total EPC cost and resultant tariff; (i). Technical guarantees, warranties, and obligations; (j). Time for Completion; and (k). Commercial and legal terms of the EPC package. Due to height restrictions, the available options for WTGs were limited. After a detailed analysis based on the above-mentioned factors, WEPL selected Goldwind

GW140-3.4MW with a hub height of 80m and AEDB approved the revised feasibility based on the said WTGs.

(viii). Regarding the capacity factor, WEPL submitted that the proposed change in WTG technology will help to achieve the net capacity factor of 38.0% as determined by the Authority in the previous tariff determination. In this regard, the Authority considers it relevant to mention that although WEPL has provided the capacity factor as 38.0%, the final capacity factor, energy numbers, sharing mechanism, etc., will be elaborated upon and determined while determining the tariff for the project. The Authority has further observed that normally the capacity factor determined at the tariff determination stage based on technical evaluation is proved to be on the higher side than that proposed by the applicants based on their feasibility studies. Therefore, to avoid the requirement of further modification in the Generation Licence in this regard, the Authority has decided to mention the capacity factor as ≥38.0%.

(ix). Regarding the project of WEPL, it is clarified that the same falls in the Category-II of renewable energy projects of the CCoE. According to the decision of the CCoE dated February 27, 2019, all Category-II projects are allowed to proceed toward achieving their requisite milestones as per RE-Policy 2006. The decision of the CCoE further mentions that if more than one year has lapsed since determination, then the tariff of the Category-II projects will be reviewed by the Authority. Further, all Category-II projects including WEPL are included as committed projects in the already approved IGCEP-2022 and newly submitted IGCEP-2024.

(x). Regarding the tariff of the project, the Authority has noted that through the determination dated August 20, 2018, it granted a tariff of US Cent. 4.3468/kWh to WEPL. However, according to WEPL, the tariff determination made it financially and practically impossible to achieve Financial Close due to the following: (a) the original spread on local financing was too low (1.7% against 2.25%), (b) the capacity factor was unviable (41.4% against 37%), and (c) the timeline (six months) was too short. Being aggrieved with the said determination, WEPL filed a review petition before the Authority which was decided on February 12, 2019, whereby NEPRA revised/increased the tariff of the project to US Cents 4.7357/kWh (Capacity 50 MW, EPC= 57.251 million, project cost 63.177 million, Interest on local loan=KIBOR+2.25% and CUF=38%). Further, the time of achieving Financial Close was extended to one year, but it was to be counted from the date of the original determination. WEPL

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submitted that it could not achieve Financial Close even after the revised tariff, as the one-year period was from the date of the first Tariff Determination, putting WEPL in the same situation as before, i.e. it effectively had the time of six months to achieve Financial Close. Moreover, CPPA-G issued the consent to purchase power one day (August 19, 2019) before the Company was to achieve Financial Close as per the revised determination, making it impossible for WEPL to achieve financial close in a six-month time.

(xi). Regarding the impact of the communicated LPM on the tariff, it is relevant to mention that under Section-7(3)(a) of the NEPRA Act, determining tariff, rate, charges, etc. is the sole prerogative of the Authority. The earlier tariff granted to WEPL through determinations dated November 20, 2018, and February 12, 2019, have already lapsed. Now, WEPL has filed a new tariff petition for the determination of the tariff, which is in line with the parameters and specifications as proposed in the LPM. In the petition, the tariff requested by WEPL is US Cent. 5.8646/kWh (Capacity= 47.6 MW, EPC= 62.80 million, project cost 70.30 million, Interest on local loan=KIBOR+2.25% and CUF=38%). The Authority has already admitted the tariff petition of WEPL for further processing and the final tariff will be determined in due course of time.

(xii). Regarding modification in the Generation Licence, the Authority has observed that in terms of Section 26 of the NEPRA Act read with Regulation-9(2) of the Licensing Regulations, the Authority is entitled to modify a license if, in its opinion such modification (a). will not adversely affect the performance by the licensee of its obligations; (b). reasonably necessary for the licensee to effectively and efficiently perform its obligations under the license; (c). is likely to be beneficial to the consumers; or (d). is reasonably necessary to ensure the continuous, safe, and reliable supply of electric power to the consumers keeping in view the financial and technical viability of the licensee.

(xiii). In view of the above, the Authority considers that the LPM will not have any adverse effect on the performance of WEPL of its obligations. The LPM will be beneficial to the consumers in general as more amount of clean electricity will be available to the power purchaser and that too with the installation of fewer numbers but more efficient WTGs. This will also help to meet the national target of RE in the overall energy mix. The Authority further considers that the LPM is reasonably necessary for the Licensee to perform its obligations effectively and efficiently under the Licence.

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Further to the said, the LPM is necessary to ensure the continuous, safe, and reliable supply of electric power to the consumers keeping in view the financial and technical viability of the Licensee.

(F). Approval of LPM

(i). In view of the above, the Authority is satisfied that the Licensee has complied with all the requirements of the Licensing Regulations pertaining to the modification. Therefore, the Authority in terms of Section-26 of the NEPRA Act read with Regulation-10(11)(a) of the Licensing Regulations approves the communicated LPM in the Generation Licence of WEPL (with changes) to the extent of changing (a). the WTG technology from Haizhuang (H111-2.0 MW) to Goldwind GW140-3.4 MW; (b). the installed capacity from 50.0 MW to 47.60 MW; (c). the number/size of WTG from 25x2.0 MW to 14x3.40 MW; (d). the term of Licence from 20 to 25 years; and (e). the net capacity factor from 40.47 % to ≥38%.

(ii). Accordingly, the Generation Licence (No. WPGL/37/2017 dated January 05, 2017) of WEPL is hereby modified. The changes made in the Generation Licence are attached as an annexure to this determination. The approval of the LPM is subject to the provisions contained in the NEPRA Act, relevant rules framed thereunder, terms & conditions of the Generation Licence, and other applicable documents.

Authority:

Maqsood Anwar Khan
(Member)

Rafique Ahmed Shaikh
(Member)

Mathar Niaz Rana (nsc)
(Member)

Amina Ahmed
(Member)

Waseem Mukhtar
(Chairman)

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National Electric Power Regulatory Authority
(NEPRA)
Islamabad – Pakistan

GENERATION LICENCE

No. WPGL/37/2017

In exercise of the Powers conferred under Section-26 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, the Authority hereby modifies the Generation Licence (No. WPGL/37/2017 dated January 05, 2017) granted to Western Energy (Pvt.) Limited, to the extent of changes mentioned hereunder:

(a). On the Face Sheet of the Generation Licence, the expiry date may be read as **December 30, 2051,** instead of **July 30, 2039**;

(b). Changes made in **Articles** of the Generation Licence are attached as **Revised/Modified Articles**;

(c). Changes made in **Schedule-I** of the Generation Licence are attached as **Revised/Modified Schedule-I**; and

(d). Changes made in **Schedule-II** of the Generation Licence are attached as **Revised/Modified Schedule-II.**

This **Modification-I** is given under my hand on this 30th **day** of **October Two Thousand & Twenty-Four**

Wasim Anwar
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 (Act No. XL of 1997), as amended from time to time;

(b). "Applicable Documents" means the rules and regulations framed by the Authority under the Act, any documents or instruments issued or determinations made by the Authority under any of the foregoing or pursuant to the exercise of its powers under the Act, the Grid Code, the applicable Distribution Code, the Market Commercial Code if any, or the documents or instruments made by the Generation Company pursuant to its Concurrence, in each case of a binding nature applicable to the Generation Company or, where applicable, to its affiliates and to which the Generation Company or any of its affiliates may be subject;

(c). "Applicable Law" means the Act and all the Applicable Documents;

(d). "Authority" means the National Electric Power Regulatory Authority constituted under Section-3 of the Act;

(e). "Bus Bar" means a system of conductors in the generation facility/Wind Power Plant/Wind Farm of the Licensee on which the electric power of all the wind turbine generators or WTGs is collected for supply to the Power Purchaser;

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

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to the generation facility/ wind power plant after the COD;

(g). "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;

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

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

(j). "Energy Purchase Agreement" 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;

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

(l). "GoP" means the Government of Pakistan acting through the AEDB which has issued or will be issuing to the Licensee an LoS for the design, engineering, construction, insuring, commissioning, operation and maintenance of the generation facility/Wind Power Plant/Wind Farm;

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

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

(o). "IEC" means the International Electro-technical Commission or its successors or permitted assigns;

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

(q). "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;

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

(s). "Licensee" means **Western Energy (Private) Limited** or its successors or permitted assigns;

(t). "Licensing Regulations" means the National Electric Power Regulatory Authority Licensing (Application, Modification, Extension and Cancellation) Procedure Regulations, 2021 as amended or replaced from time to time;

(u). "Market Commercial Code" means the market commercial code prepared and revised from time to time by Market Operator with necessary approval of the Authority;

(v). "Market Operator" means a person responsible for organization and administration of trade in electricity and payment settlements among generators, licensees and consumers;

(w). "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;

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

(y). "Policy" means the Policy for Development of Renewable Energy for

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Power Generation, 2006 of GoP as amended from time to time;

(z). "Power Purchaser" means the CPPA-G purchasing electric power on behalf of XW-DISCO(s) from the Licensee, pursuant to an Energy Purchase Agreement for procurement of electricity;

(aa). "PPIB" means the Private Power and Infrastructure Board or any other entity created for the like purpose established by the GOP to facilitate, promote, and encourage the development of renewable energy in the country;

(bb). "SCADA System" means the supervisory control and data acquisition system for gathering data in real-time from remote locations to control equipment and conditions;

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

(dd). "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;

(ee). "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 relevant Rules and Regulations issued under the Act.

Article-2
Applicability of Law

This Licence is issued subject to the provisions of the Applicable Law, as amended 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 and 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 before its COD.

Article-4
Term of Licence

4.1 This licence shall become effective from the date of its issuance of the original licence (i.e. January 05, 2017) 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 provisions of Section-14B 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 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 that 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 the 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 a 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 environmental standards as prescribed by the relevant competent authority.

Article-11
Power off take Point and Voltage

The Licensee shall deliver power 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 of Wind Power Plant

12.1 The Licensee shall install a 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 a 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.

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.

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Article-15
Design & Manufacturing Standards

15.1 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.

Article-17
Corporate Social Responsibility

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

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SCHEDULE-I
(Revised/Modified)

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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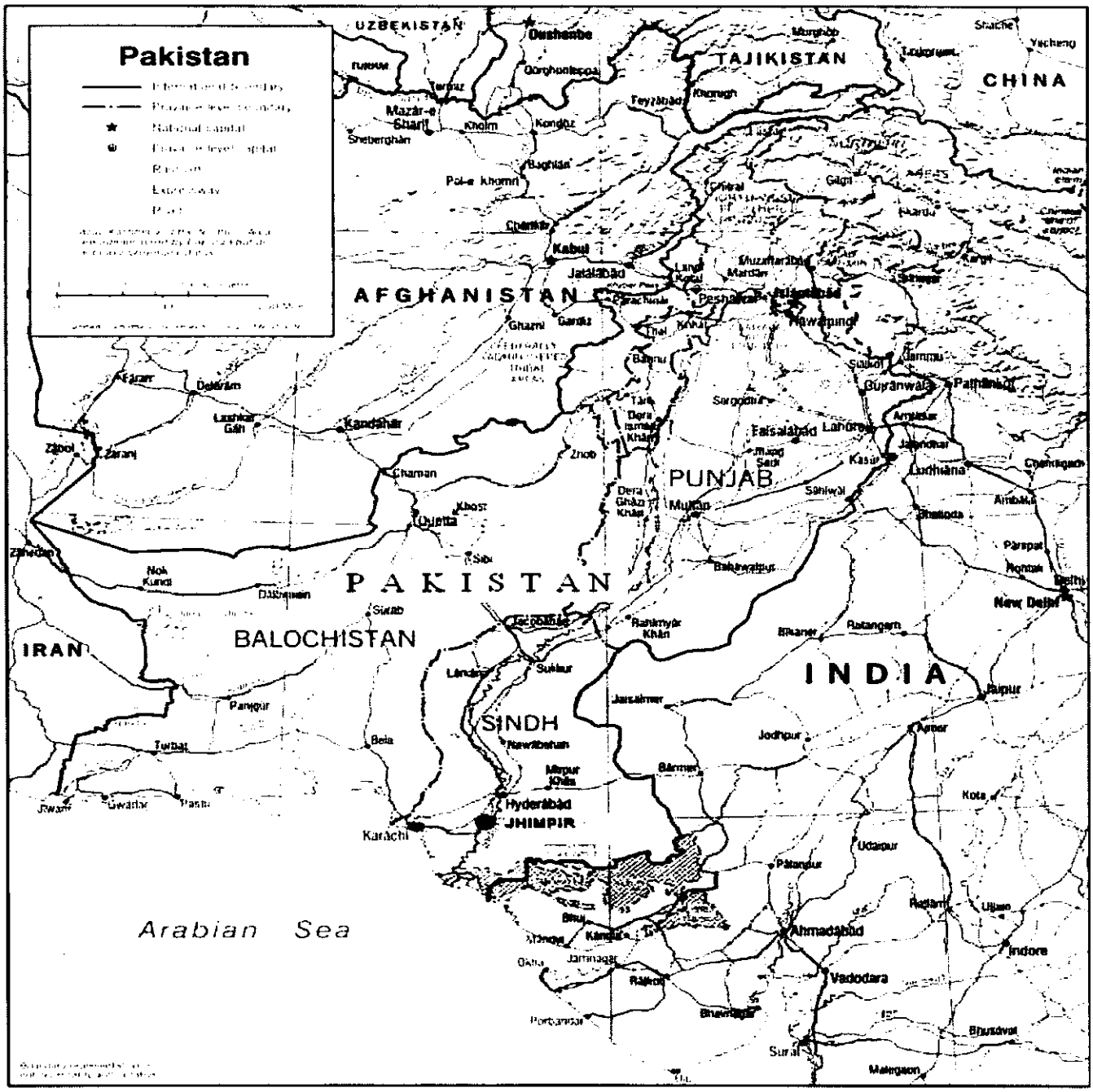
Location Map

Of the Generation Facility/Wind Power Plant/Wind Farm



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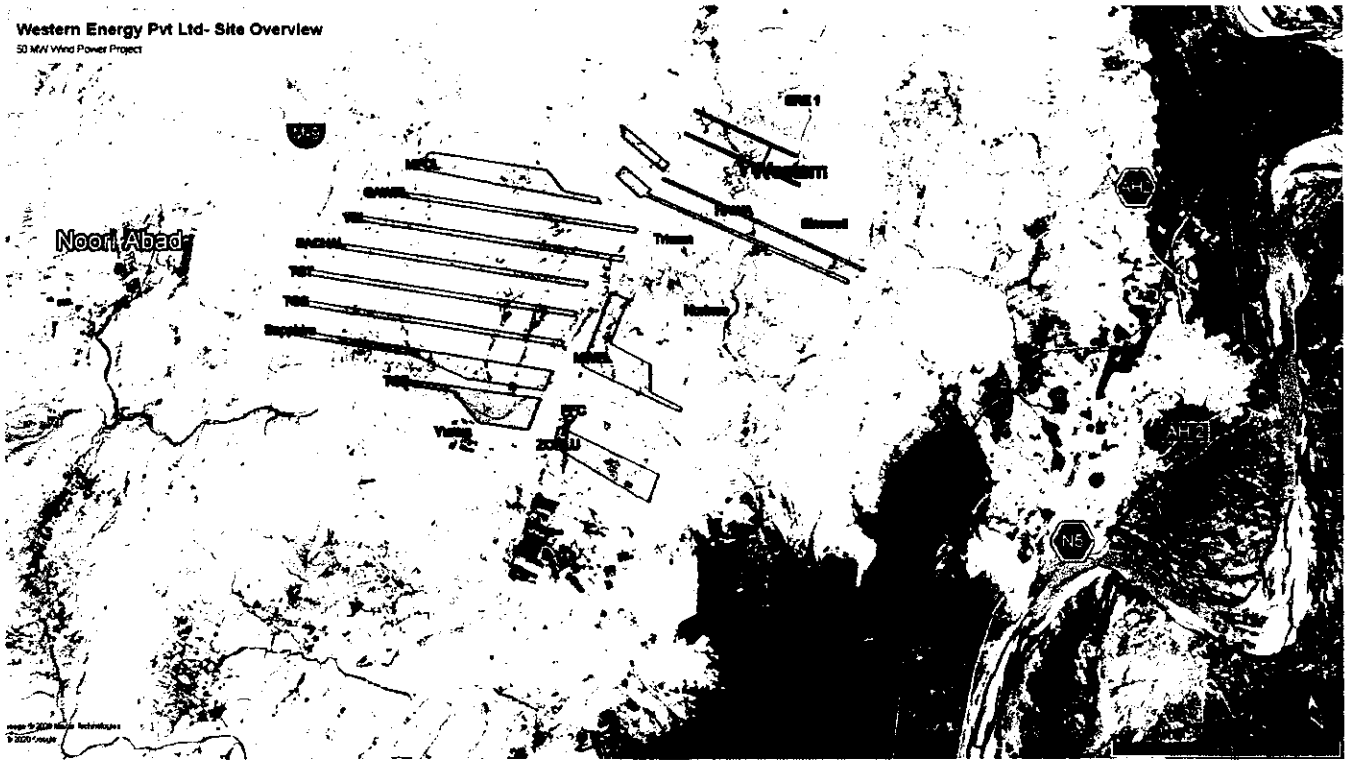
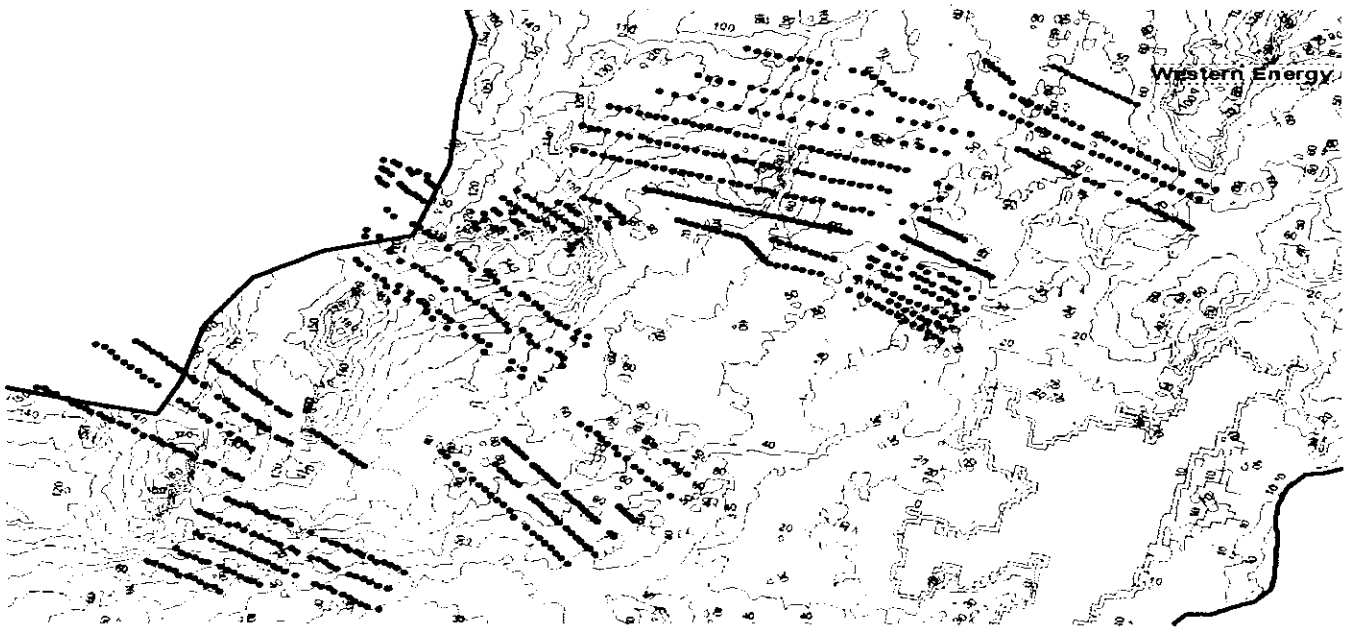
Site and Layout
of the Generation Facility/Wind Power Plant/Wind Farm





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

Total Land Area: 428 Acres

Geodetic Coordinates

Point No.	Latitude (N)	Longitude (E)
Boundary 1	25° 11' 12.32"	68° 02' 44.02"
Boundary 2	25° 11' 7.61"	68° 02' 40.98"
Boundary 3	25° 10' 0.35"	68° 04' 29.78"
Boundary 4	25° 09' 59.66"	68° 04' 30.91"
Boundary 5	25° 09' 42.21"	68° 05' 8.50"
Boundary 6	25° 09' 38.41"	68° 05' 5.14"
Boundary 7	25° 09' 0.13"	68° 05' 4.99"
Boundary 8	25° 08' 55.40"	68° 05' 1.84"
Boundary 9	25° 09' 33.30"	68° 04' 11.44"
Boundary 10	25° 09' 33.99"	68° 04' 10.28"
Boundary 11	25° 10' 39.92"	68° 02' 23.60"
Boundary 12	25° 10' 35.90"	68° 02' 20.53"

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Wind Turbine Coordinates and Micro-siting of the Generation Facility/Wind Power Plant/Wind Farm

Wind Turbine	Easting [m]	Northing [m]	Z [m]	HH [m]
GW_01	403538	2784604	49.1	80
GW_02	403770	2784435	50.4	80
GW_03	404013	2784279	50	80
GW_04	404249	2784113	50	80
GW_05	404484	2783950	48.1	80
GW_06	404717	2783784	46.6	80
GW_07	404950	2783620	46	80
GW_08	405191	2783461	46	80
GW_09	405428	2783296	46	80
GW_10	405661	2783132	46	80
GW_11	405898	2782978	46	80
GW_12	406133	2782811	48.2	80
GW_13	406365	2782649	50	80
GW_14	406645	2782488	51.4	80

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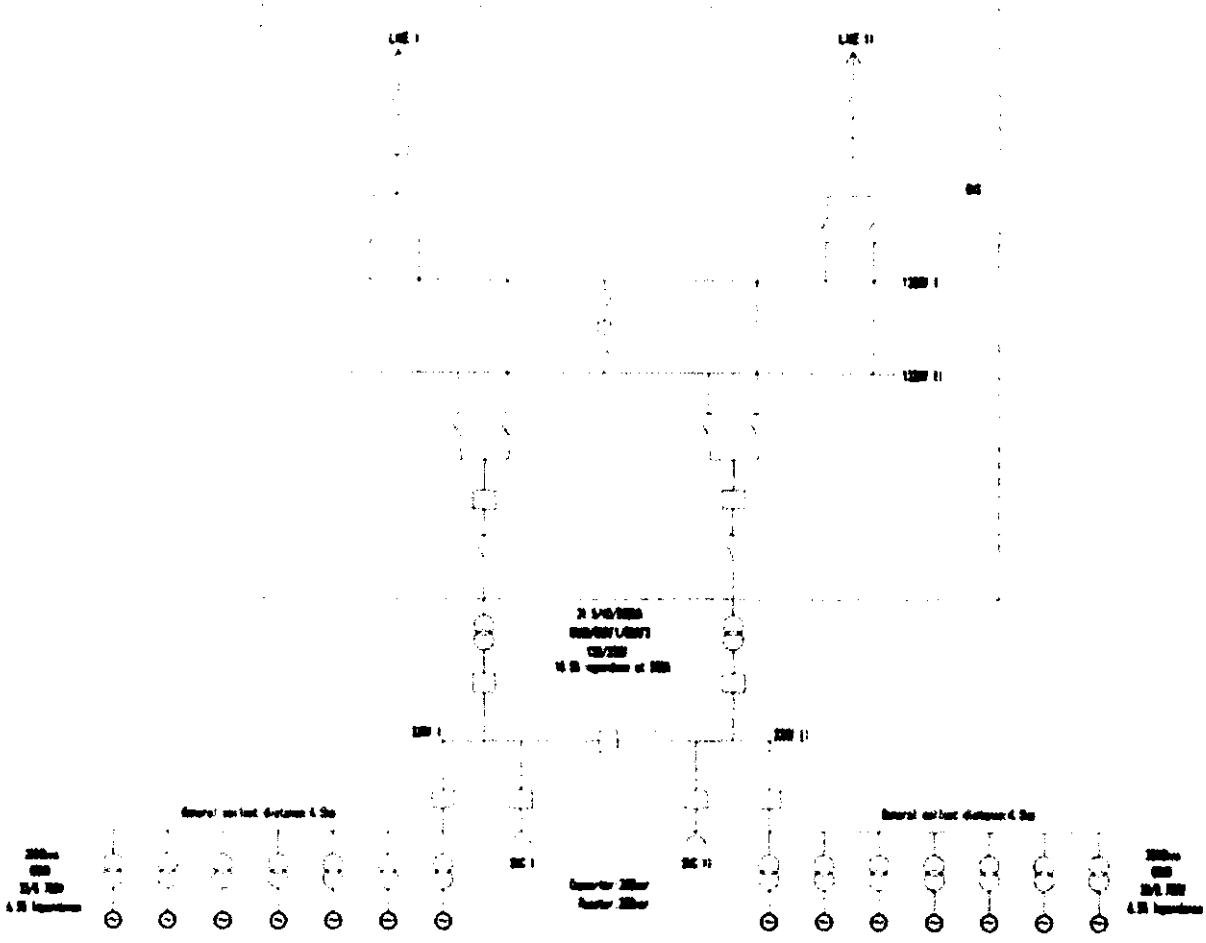
Single Line Diagram (Electrical System) of the Generation Facility/Wind Power Plant/Wind Farm



Line 1: 7*3.4MW

Line 2: 7*3.4MW

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

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

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

(a). A 3 KM 132-KV double circuit transmission line looping in-out with the sub-cluster connecting the Master Wind Energy (Private) Limited to Jhimpir-1 220/132KV collector substation.

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

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

(b). 220 kV D/C transmission line, approximately 7 km long, on a twin-bundled Greeley conductor for looping In/Out of one of the planned Jhimpir-1 – Gharo New D/C transmission line at Jhimpir-2.

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

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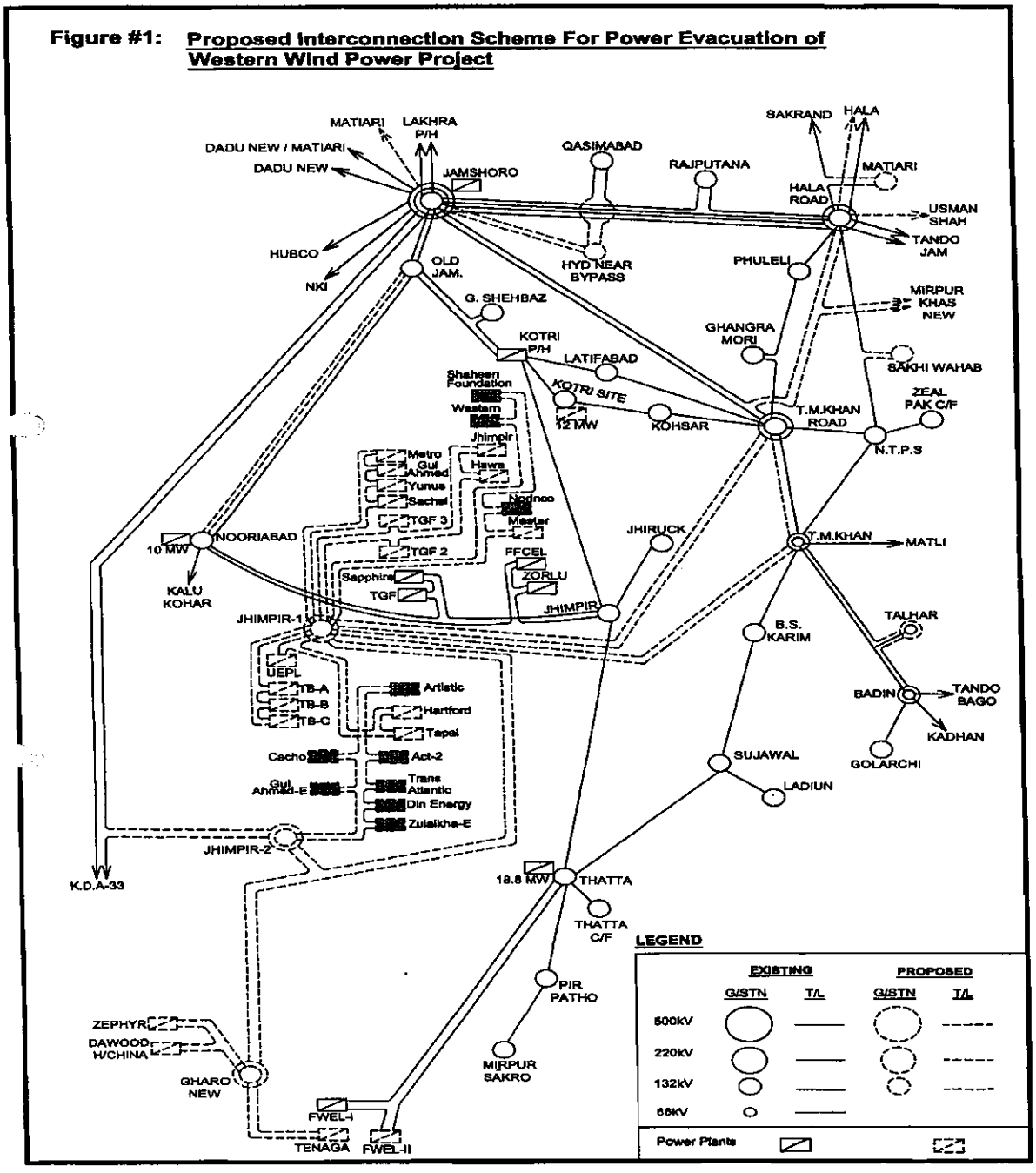
Schematic Diagram of Interconnection Arrangement/Transmission Facilities for Dispersal of Power from Generation Facility/Wind Power Plant/Wind Farm

Figure #1: **Proposed Interconnection Scheme For Power Evacuation of Western Wind Power Project**



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

(A). General Information

(i).	Name of Applicant/Company	Western Energy Private Limited
(ii).	Registered/Business Office	F -25, Block-5, Rojhan Street, Kehkashan, Clifton, Karachi, Pakistan
(iii).	Plant Location	Jhimpir, Nooriabad, District Thatta, Sindh
(iv).	Type of Generation Facility	Wind Power

(B). Wind Farm Capacity & Configuration

(i).	Wind Turbine Type, Make & Model	Goldwind, GW140-3.4 x 14 (HH = 80 m)
(ii).	Installed Capacity of Wind Farm (MW)	47.6 MW
(iii).	Number of Wind Turbine Units/Size of each Unit (MW)	14 x 3.40 MW

(C). Wind Turbine Details

(a).	**Rotor**	
(i).	Number of blades	3
(ii).	Rotor diameter	140 m
(iii).	Swept area	15,482 m^2
(iv).	Power regulation	Combination of blade pitch angle adjustment, and generator/converter torque control.
(v).	Cut-in wind speed	2.5 m/s

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(vi).	Rated wind speed	10.3 m/s (air density = 1.225 kg/m3)
(vii).	Cut-out wind speed	20 m/s
(viii)	Survival wind speed	37.5 m/s (V ref)
(ix)	Pitch regulation	Independent electromechanical pitch system for each blade, rotary drives, 3-stage planetary gearbox
(b).	**Blades**	
(i).	Blade length	68.5 m
(ii).	Material	GFRP fiber-reinforced resin
(c).	**Gearbox**	
(i).	Type	Direct Drive/Gearless
(ii).	Gear ratio	N/A
(iii).	Main shaft	N/A
(d).	**Generator**	
(i).	Nominal Power	3400 (kW)
(ii).	Voltage	720 V
(iii).	Type	Synchronous Permanent
(iv).	Degree of Protection	IP54 Generator – IP23 Ring Body
(v).	Coupling	Friction Clutch
(vi).	Power factor	Capacitive 0.925 – Inductive 0.925
(e).	**Control System**	
(i).	Type	PLC Control System
(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, trip logs

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(f).	**Brake**	
(i).	Design	Aerodynamic Brake
(ii).	Operational brake	Aerodynamic brake achieved by feathering blades.
(iii).	Secondary brake	Hydraulic brake
(g).	**Tower**	
(i).	Type	Tubular Steel Tower
(ii).	Hub heights	80 m
(h).	**Yaw System**	
(i).	Yaw bearing	Ball bearing slewing ring Hydraulic System
(ii).	Brake	Hydraulic and Electromagnetic Braking System
(iii).	Yaw drive	4 Stage Planetary Gearbox
(iv).	Speed	0.5°/s Controlling speed

(D). Other Details

(i).	Project Commissioning Date (Anticipated)	December 31, 2026
(ii).	Expected Life of the Project from Commercial Operation Date (COD)	25 Years

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Power Curve
of Wind Turbine Generator
Goldwind (GW144-3.40 MW)
(Tabular)

Wind speed [m/s]	Power [kW]
2.5	13.22
3	68.67
3.5	142.15
4	233.32
4.5	343.42
5	475.29
5.5	636.88
6	830.91
6.5	1058
7	1323
7.5	1626
8	1963
8.5	2333
9	2709
9.5	3053
10	3318
10.5	3467
11	3551
11.5	3570
12	3570
12.5	3570
13	3570
13.5	3570
14	3570
14.5	3570
15	3570
15.5	3570
16	3570
16.5	3570
17	3570
17.5	3570
18	3570
18.5	3570
19	3570
19.5	3570
20	3570
20.5	0

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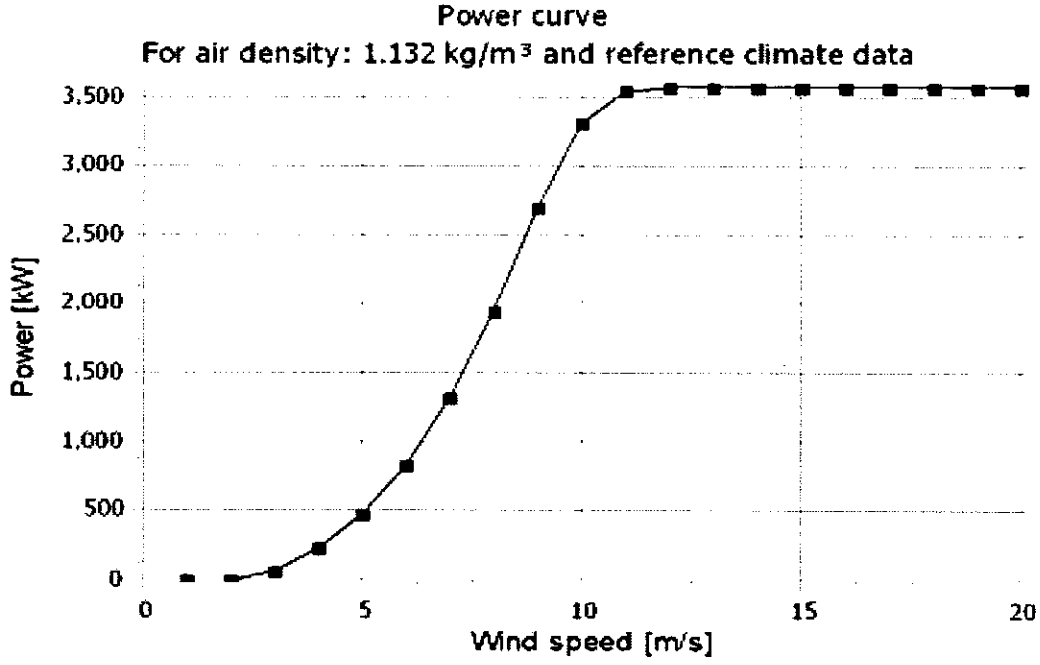
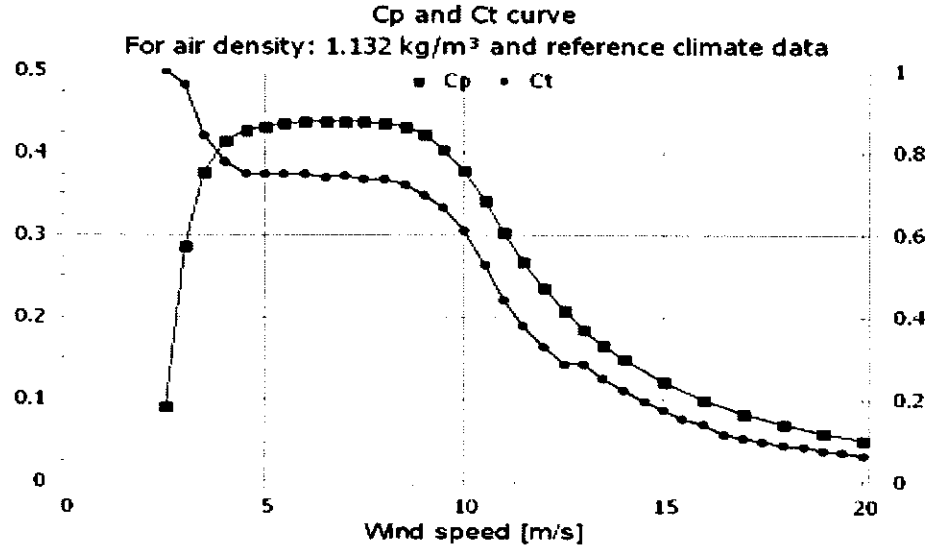
Power Curve
of Wind Turbine Generator
Goldwind (GW144-3.40 MW)
(Graphical)





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SCHEDULE-II
(Revised/Modified)

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) Annual Energy Generation (GWh) and Net Capacity Factor of the Generation Facility /Wind Farm of Licensee are given in this Schedule.

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SCHEDULE-II

(1).	Total Installed Gross ISO Capacity of the Generation Facility /Wind Farm (MW/GWh)	47.6 MW
(2).	Total Annual Full Load Hours	3,329 Hrs.
(3).	Average Wind Turbine Generator (WTG) Availability	97.0 %
(4).	Total Gross Generation of the Generation Facility/Wind Farm (in GWh)	≥216.3
(5).	Array & Miscellaneous Losses (GWh)	≤45.97
(6).	Availability Losses (GWh)	≤6.48
(7).	Balance of Plant Losses (GWh)	≤5.4
(8).	Annual Energy Generation (25 years equivalent Net AEP in GWh)	≥158.45
(9).	Net Capacity Factor	≥38%

Note

All the above figures are indicative as provided by the Licensee. The net energy available to the power purchaser for dispatch will be determined through procedures contained in the energy purchase agreement.

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