National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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

Registrar

No. NEPRA/R/DL/LAG-436/ 27429-436 December 13, 2019

Mr. Mustafa Abdullah,
Chief Executive Officer,
Moro Power Company (Private) Limited,
4C, M-1, Ittihad Lane 12, Phase 2, Extension DHA,
Karachi.

Subject: **Grant of Generation Licence No. WPGL/58/2019**
Licence Application No. LAG-436
Moro Power Company (Private) Limited (MPCPL)

Reference: MPCPL's application vide letter dated August 13, 2018 (received on August 15, 2018).

Enclosed please find herewith Determination of the Authority in the matter of Application of "Moro Power Company (Private) Limited (MPCPL)" for grant of Generation Licence along with Generation Licence No. WPGL/58/2019 annexed to this determination granted by the National Electric Power Regulatory Authority (NEPRA) to MPCPL for its 24.90 MW Wind Power Plant located at Deh Kohistan, Jhimpir, District Thatta, in the province of Sindh, pursuant to Section 14B of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (The Amended Act).

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

Enclosure: As Above

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(Syed Safeer Hussain)

Copy to:

1. Secretary, Ministry of Energy, Power Division, A-Block, Pak Secretariat, Islamabad.
2. Chief Executive Officer, Alternative Energy Development Board (AEDB), 2nd Floor, OPF Building, G-5/2, Islamabad.
3. Chief Executive Officer, CPPA-G, ENERCON Building, Sector G-5/2, Islamabad.
4. Managing Director, NTDC, 414-WAPDA House, Lahore.
5. Chief Executive Officer, Hyderabad Electric Supply Company Limited (HESCO), WAPDA Offices Complex, Hussainabad, Hyderabad.
6. Director General, Environment Protection Department, Government of Sindh, Complex Plot No. ST-2/1, Korangi Industrial Area, Karachi.
7. The Secretary, Energy Department, Government of Sindh, 3rd Floor, State Life Building No. 3, Opposite CM Secretariat, Karachi.

National Electric Power Regulatory Authority (NEPRA)

Determination of the Authority in the Matter of Application of Moro Power Company (Private) Limited for the Grant of Generation Licence

December 13, 2019
Case No. LAG-436

(A). Background

(i). Energy Department, Government of Sindh (EDGoS) is responsible for planning and development of energy projects in the province of Sindh. EDGoS has issued Letter of Intent (LoI) to various RE developers for setting up the energy projects in the province. EDGoS issued an LoI to Moro Power Company (Pvt.) Limited (MPCPL) for setting up a twenty five (25) MW wind based Generation Facility/Wind Power Plant (WPP)/Wind Farm (WF) in the Jhimpir wind corridor, District Thatta, in the Province of Sindh.

(ii). According to the terms and conditions of the LoI, MPCPL carried out a Feasibility Study of the project including, *inter alia*, WPP/WF equipment and Micro-Sitting details, detailed power production estimates based on wind mast data of project site, soil tests reports, technical details pertaining to selected Wind Turbine Generator (WTG) and other allied equipment to be used in the WPP/WF, Electrical Studies (including but not limited to short-circuit study, power quality study, load flow study and stability study), environmental study, project costing, financing plan, carbon credits, financing terms, tariff calculations and assumptions for financial calculations including economic/financial analysis.

(iii). In consideration of the above, MPCPL completed the Feasibility Study of the project and decided to approach the Authority for the grant of generation licence as stipulated Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the "NEPRA Act").

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(B). Filing of Application

(i). In consideration of the above, MPCPL submitted an application on August 15, 2018 for the grant of generation licence in terms of Section-14B of 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 application and found it deficient in terms of the Licensing Regulations. Accordingly, on the directions of Registrar, MPCPL filed the requisite information/documents on September 10, 2018 and accordingly the Registrar presented the matter before the Authority for admission of the application or otherwise.

(iii). 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 September 27, 2018 for consideration of the grant of the generation licence as stipulated in Regulation-7 of the Licensing Regulations. The Authority approved an advertisement to invite comments of general public, interested and affected persons in the matter as stipulated in Regulation-8 of the Licensing Regulations. Accordingly, notices were published in one (01) Urdu and one (01) English newspapers on September 28, 2018.

(iv). 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 September 28, 2018, soliciting their comments for assistance of the Authority.

(C). Changes/Amendment in Application

(i). While the above mentioned application for generation licence was under process, the Company/MPCPL through its letter dated February 25, 2019 informed about certain changes in its application including change of WTG Technology from Ming Yang, China to Nordex-Acciona, Spain and the installed capacity of the WPP/WF from 25.0 MW to 24.90 MW.

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(ii). The Authority in its Regulatory Meeting held on March 19, 2019 considered the matter and decided to seek fresh comments of the stakeholders. Accordingly, an addendum to the earlier notice of admission was published in the press on April 10, 2019. Further, separate letters were sent to different stakeholders as per the approved list on April 10, 2019, soliciting their comments for assistance of the Authority.

(D). Comments of Stakeholders

(i). In reply to the above, the Authority received comments from four (04) stakeholders which included Engineering Development Board of Ministry of Industries and Production (EDB), Karachi Shipyard & Engineering Works Limited (KSY&EWL), Central Power Purchasing Agency (Guarantee) Limited (CPPA-G) and Ministry of Science and Technology (MoST). The salient points of the comments offered by the said stakeholders are summarized below: -

(a). EDB commented that none of the clauses of said application are related to EDB. It is, however, recommended that all efforts should be made to utilize indigenous potential available for the project;

(b). KSY&EWL expressed that addition of a new generation facility of 25 MW WPP will definitely be helpful in decreasing the shortfall of electrical power in the county. Therefore, KSY&EWL has no objection if the company is granted generation licence as per their request. Further, it was stated that KSY&EWL is fully capable of manufacturing the towers for wind turbines. The fabrication facilities are available in the vicinity of Karachi much near to Thatta. The offered rates of fabrication and onsite installation are quite competitive and at par with the market. It is therefore requested to advise the company to consider facilities of KSY&EWL for local fabrication, erection and installation of the WPP;

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(c). CPPA-G in its comments submitted that (a). it cannot provide consent for purchase of power from MPCPL; (b). CCoE has decided that all renewable energy projects will be awarded through competitive bidding and according to quota allocation

by Grid Code Review Panel; (c). currently there is no Policy for induction of RE; (d). for the proposed additions of capacity in the system, due consideration should be carried out by NEPRA prior to issuance of generation licence, in particular light of Rule-3(5) of the NEPRA Licensing (Generation) Rules, 2000 (the Generation Rules); (e). according to NEPRA State of the Industry Report, 2017 (SIR-2017) the capacity addition in the system without rationalizing the same with the demand projections, is currently yielding a capacity surplus of 908 MW, which is projected to rise to approximately 13,934 MW by the year 2025, which has significant financial implications for the end consumers and (f). NEPRA must review the proposal in the context of the demand vs. supply situation, coupled with the quantum of renewable energy to be induced in the national grid according to the recommendations of the Grid Code Review Panel duly approved by NEPRA from time to time; and

(d). MoST stated that installation of the 25 MW WPP at District Thatta will help to prevent/overcome the electricity shortfall in the designated area up to some extent. The WTGs to be used in the project are Nordex-Accoina turbines, which is consistently in the top 10 of the wind turbine manufacturers in the world. The previous manufacturer (i.e. Ming Yang) is a Chinese company that is ranked in the top 5 of the wind turbine manufacturers in the world. Equipment to be used in the plant must be of top quality, manufactured by internationally reputed OEMs. Furthermore, MoST cannot comment on financial and other TORs of the project.

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(ii). The Authority reviewed the above comments of the stakeholders and in view of the observations of the stakeholders, considered it appropriate seeking the perspective of MPCPL on the same. Regarding the observations/comments of EDB and KSY&EWL, MPCPL informed that its project will have locally fabricated steel towers, locally manufactured electrical panels and other local resources, thus creating local jobs. On the observations of MoST, it was submitted that on the investor point of view, the WTGs of Nordex-Acciona are more acceptable than Ming Yang, as the same are of German/Spanish origin and have

foot prints in several countries. Further, Nordex has already installed 6x50 MW projects in Pakistan. Therefore, the WTGs of Nordex-Acciona have been selected for the project.

(iii). Regarding the comments of CPPA-G, MPCPL submitted a detailed response stating that comments/observations of CPPA-G "mind boggling" keeping in view the fact that CPPA-G was fully informed and involved in all steps leading to "Approval of Grid Interconnection Study Report" of our 25 MW WPP by NTDC. MPCPL has been allotted available space in Jhimpir-I Grid Station, which is dedicated to wind power projects in close vicinity. Regarding transmission lines issue, MPCPL informed that NTDC has planned to work on improvement/up-gradation of KDA Scheme 33 to Jamshoro-transmission lines in current financial year. It seems CPPA is unaware of fact that NEPRA awarded Tariff to wind projects in the range of US cents 4.42 to 4.44/Kwh. This wind power tariff when compared to that of coal power projects is less than 1/2 than half of that and when compared to tariff of RLNG it makes only on third of the same. The above tariffs on cost-plus basis issued by NEPRA are self-explanatory and answer to the comments of CPPA-G. However as a word of caution it is submitted that (a). the statement given by information Minister GOP on October 15, 2018, stating that average cost of production of electricity in Pakistan is now Rs. 15.5/Kwh. Even the cost of electricity from Neelum-Jhelum Hydro project as approved by NEPRA is Rs. 14/Kwh; (b). the honorable Minister blamed the previous Govt. and concerned agencies of poor planning, misjudging while giving permission at exorbitant rate to power projects based on imported coal and imported LNG; (c). comparing all the above negative scenarios that have taken place in Pakistan in last five years in energy sector, Pakistan now has the highest cost of electricity generation in the world; (d). on the other hand the tariff given by the Authority in to wind projects is in range of US cents 4.2 to 4.4/Kwh only and anyone looking at above comparable costs should appreciate the Authority for introducing wind projects at such competitive rates, which does not require import of coal or LNG but is dependent on wind as fuel.

(iv). The Authority considered the above submissions of MPCPL found the same plausible. Accordingly, the Authority considered it appropriate to proceed further in the matter for the consideration of grant of generation licence as stipulated in the Licensing Regulations and the Generation Rules.

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(E). Evaluation/Findings

(i). The Authority examined the entire case in detail including the information provided by MPCPL in its application for the grant of generation licence, feasibility study of the project, Initial Environmental Examination (IEE), GIS etc., provisions of the RE Policy and the relevant rules & regulations.

(ii). The Authority has observed that the applicant MPCPL is a private limited company incorporated under Corporate Universal Identification No. 0091537, in Pakistan on January 16, 2015 under the Companies Ordinance, 1984. According to the Memorandum and Articles of Association, the objects of the company, *inter alia*, include business of power generation and its sale thereof. EDGoS issued LoI for development of the project and recommended allotment of 240 acres of land in Deh Kohistan 7/1, Tapo Jhimpir and Deh Kohistan 7/3, Tapo Jangshahi, Taluka Jhimpir, District Thatta in the province of Sindh for setting up the WPP.

(iii). According to the submitted information, the total outlay of the project will be U.S. $ 35 million which will be financed through a combination of debt (U.S. $ 28.0 million) and equity (U.S. $ 07.0 million) in a ratio of 80%:20% which is in line with the prevailing benchmark set out in the RE Policy and the determinations of the Authority.

(iv). According to the terms and conditions of the LoI, MPCPL 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 WTG and other allied equipment to be used in the proposed generation facility/WPP/WF, GIS, environmental study and project financing, etc. In this regard, MPCPL through its letter dated September 27, 2019 has provided approval of the Panel of Expert (PoE) of EDGoS for the said feasibility study.

(v). The study of the feasibility study reveals that MPCPL considered various world class manufactures of WTGs. After duly considering the various factors including (a). wind resource position of the corridor of Jhimpir (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

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parts for WTG etc., the company initially decided to select WTGs of Ming Yang, China, but later on opted for the WTGs of Nordex-Acciona. The proposed WTG of Nordex-Acciona have better footprint worldwide as well as in Pakistan and rank among top 10 WTG manufacturers of the world.

(vi). The sponsors of the project also carried out the Grid Interconnection Study (GIS) for dispersal of electric power from the proposed WPP through the Power Planers Internationals. According to the said GIS, the dispersal of electric power will be made on 132kV voltage level. The dispersal/interconnection arrangement will be consisting of 132 kV Double Circuit (D/C) transmission line by looping In-Out with a sub cluster connecting neighboring WPPs of Tapal Energy and Hartford. In this regard, NTDC through its letter dated September 25, 2018 has approved the revised GIS.

(vii). Regarding Power Evacuation Certificated (PEC) from NTDC for evacuation of generated power from the project, the Authority observed that most of the solar and wind projects are suffering from unnecessary delays in their processing and implementation due to non-issuance of PEC by NTDC as required by the Authority. In order to avoid such hindrances/delays in development of the projects, the Authority reviewed its earlier decision and decided to dispense with the requirement of PEC for grant of generation licences to solar and wind projects.

(viii). Regarding the project of MPCPL, the Authority has observed that according to decision of Cabinet Committee on Energy (CCoE) dated February 27, 2019 the proposed WPP of MPCPL falls in the Category-III of RE projects (i.e. Projects that have been issued LoI prior to the expiry of RE Policy, 2006 on March 08, 2018 but have not received a Tariff from NEPRA) and all Category-III projects are allowed to proceed ahead subject to becoming successful in the competitive bidding process to be undertaken by AEDB specifically designed for each technology under this category based on the quantum ascertained for each technology by Indicative Generation Capacity Expansion Plan (IGCEP) by NTDC. Once the IGCEP determines how much additional power it needs to induct in the system by June 2023 as approved by the Authority and NTDC confirms its interconnection including the completion of pre-requisites for the issuance of Power Acquisition Request. In this regard, AEDB will conduct competitive bidding, one for each technology, for the capacity to be procured under each technology, with resource risk being borne by the Project.

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(ix). Regarding impact of the project on environment, the Authority is of the view that the proposed project for which generation licence is being sought, is based on wind which is a RE source and does not cause pollution as in the case of conventional power plants. However, the Authority considers that the operation of the WPP may cause soil pollution, water pollution and noise pollution during construction and operation. In this regard, the licensing department has observed that MPCPL carried out the Initial Environment Examination Study and submitted the same for the consideration and approval of Sindh Environmental Protection Agency (SEPA). In this regard, SEPA has issued a No Objection Certificate (NOC) for the construction of the project.

(x). The Authority has considered the comments of stakeholders and observed that all the stakeholders have supported the grant of generation licence except CPPA-G. In its comments CPPA-G has raised certain observations regarding the surplus capacity in the system while making specific reference to SIR-2017. The Authority has observed that CPPA-G has not provided any specific comments rather based on the contents of SIR 2017, it has contested that according to said report there will be surplus capacity in the years 2018-25. In this regard, the Authority hereby clarifies that the specific provisions of SIR-2017 referred by CPPA-G are based on the data provided by NTDC whereby it has been indicated that there may be some surplus installed capacity due to addition of various types of power generation facilities including Coal, Gas, Wind, Solar, Bagasse, Hydro and Nuclear. However, it has been clearly mentioned in Section 1.1 of said report that "...the capacity surplus in the later years i.e.2022 to 2025 may not be available due to multiple issues and resulting uncertainties in completion of large hydro-based power projects..." In this regard, the Authority hereby refers to the linked information contained in Table-31, Table-34 and Table-35 which when read together gives the capacity and the expected Commissioning Year of future projects pertaining to Hydel projects in the Public Sector, Hydel, Coal and RLNG Projects being set in the Private Sector Solar, Wind and Bagasse/Biomass based generation facilities to be set up in the private Sector.

(xi). A detailed review of these project reveals projects like Dasu (Phase-I), Up-gradation of Mangla and Diamer Bhasha having accumulated installed capacity of 6970 MW, were expected to be commissioned by the year 2024. However, the same are delayed and may not achieve the said time lines due to the fact that a number of milestones pertaining to these projects including acquisition

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of land, preparation/approval of PC-I and award of contract(s) are facing delays for one reason or the other. Similarly, projects of coal and hydel in the private sector namely (a). Kohala; (b). Chakothi-Hattian; (c). Azad Pattan; (d). Kaigah; (e). Mahl; (f). Turtonas-Uzghor; (g). Athmuqam with accumulated installed capacity of 3810 MW, which earlier envisaged expected COD by December 2024 and 2025, are facing delays in Financial Close and thus construction and other related activities;.

(xii). The Authority also considered the latest update available from PPIB which indicates that the said projects will not be coming online before December 2028. Further, Imported/Local Coal projects of (a). Grange; (b). Shanghai Electric; and (c). Oracle Thar of accumulated installed capacity of 2803 MW having expected COD between September 2019-2021 are also facing delays. According to the information available from PPIB, for the project of Grange, a notice for encashment of Guarantee has been issued which is under litigation. Further, the expected COD for projects of Shanghai and Oracle Thar will now be at least 2023.

(xiii). Regarding WPPs, the Authority has issued licences and tariff to a number of WPPs which are facing delay due to non-issuance of Letter of Support (LoS) due to which it is not clear that projects of (a). Shaheen Renewable Energy 1 (Private) Limited; (b). Western Energy (Private) Limited; (c). Lakeside Energy (Private) Limited; (d). Artistic Wind Power (Private) Limited; (e). Trans Atlantic Energy (Private) Limited; (f). Tricom Wind Power (Private) Limited; (g). Din Energy Limited; Act 2 Wind (Private) Limited; and (h). NASDA Green Energy (Private) Limited, having accumulated installed capacity of 449.3 MW which were earlier anticipated to be connected to the National Grid between 2019-2020, will come online.

(xiv). On the front of Solar, similar kind of situation is prevailing as the power projects mentioned in the Table-35 consist of (a). Access Solar (Pvt.) Limited; (b). Buksh Solar (Pvt.) Limited; (c). Jan Solar (Pvt.) Limited; (d). Lalpir Solar Power (Pvt.) Limited; (e). Siddiqsons Energy Limited and (f). Zurlu Energy (Pvt.) Limited of accumulated installed capacity of 191.52 MW are also delayed for same reasons as mentioned in the case of wind power projects;

(xv). Similarly for the Bagasse based project, the Authority granted generation licences and tariff to different projects including: (a). Hunza Power (Pvt.) Limited; (b). Indus Energy Limited; (c). Faran Power (Pvt.) Limited; (d). Etihad

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Power Generation Limited; and (e). Bahawalpur Energy (Pvt.) Limited with accumulated installed capacity of 212.90 MW, however, the said projects have shown no progress as Energy Purchase Agreements have not been signed yet due to which these projects are facing delays and their expected COD will now be postponed for at least two (02) years instead of what is given in the SIR 2017.

(xvi). In view of the above explanation, it is clear that around thirty (30) power projects on different fuels with cumulative installed capacity of around 11000 MW are facing delays due to different problems/issues as explained above and their COD is not certain. In view of the said, the Authority considers that instead of making cursory remarks based on the report which provides only snapshot of the power sector, CPPA-G and NTDC should carry out a proper demand-supply assessment/analysis truly aligned with the actual implementation schedule of the projects to determine whether practically there is any surplus or not. The Authority is also of the considered opinion that with the delays being experienced by the major projects it is very unlikely that there will be any surplus as claimed by CPPA-G. Therefore, the Authority is of the considered opinion that all the projects approaching it must be processed in accordance with the Law. The issues of surplus capacity and addition of new generation capacity in the system, have also been clarified in SIR 2018. In view of the above, the Authority considers that the observations of CPPA-G regarding surplus power in the system needs to be reviewed.

(xvii). On the specific observations raised by CPPA-G regarding Rule-3(5) of the Generation Rules, the Authority has observed that the said Rule describes a broad criterion 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 proposed generation facility against the preferences indicated by the Authority; (d). the cost and right-of-way considerations related to the provision of transmission and interconnection facilities; (e). the constraints on the transmission, system likely to result from the proposed generation facility 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; and (h). the optimum utilization of various sites in the

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context of both the short-term and the long-term requirements of the electric power industry as a whole. In this regard, the Authority clarifies that while, deciding the applications for the grant of generation licences it invariably considers the provisions of the above mentioned Rules.

(xviii). In this regard, the Authority considers it appropriate to mention 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 twenty three (23) projects with a cumulative Installed Capacity of around 1186 MW have been installed and commissioned whereas another twenty-three (23) projects including that MPCPL with cumulative capacity of around 1250.00 MW are in various stages of implementation. The proposed project of MPCPL will result in optimum utilization of the RE which was earlier untapped, resulting in pollution free electric power. It is clarified that that wind is an indigenous RE resource and such resources have a preference for the energy security. 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 approved the GIS of the project considering the project in its long-term forecasts for additional capacity requirements.

(xix). In view of the clarification and justifications given above, the Authority is of the considered view that the project of MPCPL fulfills the eligibility criteria for grant of generation licence as given under the NEPRA Act, rules and regulations and other applicable documents.

(F). 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, the Authority is of the considered opinion that for sustainable development, all indigenous power generation resources including renewable energy must be developed on priority basis.

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(ii). The existing energy mix of the country is heavily skewed towards the costlier thermal power plants, mainly operating on imported fuel. The import of fuel for electric power generation not only causes depletion of the precious foreign exchange reserves of the country but is also an environmental concern. Therefore, in order to achieve sustainable development it is imperative that indigenous RE resources are given priority for power generation and their development be encouraged. The Authority considers that the proposed project of MPCPL 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 furnace oil but will also help reduction in carbon emission by generating clean electricity, thus improving the environment.

(iii). The Authority considers that the proposed WPP of MPCPL will help in diversifying the energy portfolio as well increasing share of RE in 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 emissions by generating clean electricity, thus improving the environment.

(iv). As explained in the preceding paragraphs, MPCPL has provided the details of location, technology, size, net capacity/energy yield, interconnection arrangements, technical details and other related information for the proposed WPP. In this regard, the Authority has observed that GoS has allocated 240 acres of land to MPCPL in Jhimpir wind corridor for setting up the generation WPP. The said details have been incorporated in Schedule-I of the generation licence. The Authority directs MPCPL to utilize the allocated land exclusively for the proposed WPP and not to carry out any other activity on the said allocated land except with the prior approval of the Competent Authority.

(v). Regarding the term of the generation licence, the Authority has noted that under Rule-5(1) of the Generation Rules, the term of a generation licence shall be commensurate with the maximum expected useful life of the units comprised in a generating facility, except where an applicant consents to a shorter term. According to the information provided by MPCPL, the WPP will tentatively achieve COD by July 30, 2021 and will have a useful life of more than twenty-five (25) years from its COD. In this regard, MPCPL has requested that the term of the proposed generation licence may be fixed as twenty-five (25) years. The Authority has noted that as per international benchmark, the useful life of wind turbine

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generators is normally considered as 20 to 25 years. The WTGs selected by MPCPL for its WPP are type certified and the proposed term of licence is in-line with international standards, term of generation licences tariff control period of 25 years granted by the Authority to other similar wind projects. In view the said, the Authority fixes the term of the generation licence as twenty five (25) years from COD of the project.

(vi). Regarding tariff, the Authority hereby clarifies that under Section-7(3)(a) of the NEPRA Act, determining tariff, rate and charges, etc. is the sole prerogative of the Authority. In this regard, it is pertinent to mention that MPCPL has filed a tariff petition for determination of its tariff on cost plus basis. The Authority has admitted the same and the same is in advance stage of processing. Further to the said, the CCoE has decided that RE projects which are at the stage of LoI will be going through Competitive Bidding (CB). In view of the said, it is still not clear whether MPCPL will be having a cost plus tariff or a tariff through CB. In view of the said, the Authority considers appropriate to direct MPCPL to charge the power purchaser/CPPA-G only such tariff which has been determined, approved or specified by it. In view of the said, the Authority decides to include a specific article in the generation licence. Further, the Authority directs MPCPL to adhere to the said in letter and spirit without any exception.

(vii). About the compliance with the environmental standards, as discussed in the preceding paragraphs, MPCPL has provided the NOC from SEPA 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 specific article in the generation licence along with other terms and conditions making it obligatory for MPCPL to comply with relevant environmental standards at all times. Further, the Authority directs MPCPL to submit a report on a bi-annual basis, confirming that operation of its WPP is in compliance with the required environmental standards as prescribed by the concerned environmental protection agency.

(viii). The proposed generation facility of MPCPL will be using RE resource for generation of electric power therefore, the project may qualify for the carbon credits. In view of the said, an article for carbon credits and sharing its proceeds with the power purchaser has been included in the generation licence. Accordingly, the Authority directs MPCPL to initiate the process in this regard at the

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earliest so that proceeds for the carbon credits are materialized. MPCPL shall be required to share the proceeds of the carbon credits with the power purchaser as stipulated in the generation licence.

(ix). In view of the above, the Authority hereby approves the grant of generation licence to MPCPL on the terms and conditions set out in the generation licence annexed to this determination. The grant of generation licence is subject to the provisions contained in the NEPRA Act, relevant rules, regulations made thereunder and other applicable documents.

Authority

Rafique Ahmed Shaikh
(Member)

Rehmatullah Baloch
(Member)

Saif Ullah Chattha
(Member)

(Did not Attend the meeting-Away)

Engr. Bahadur Shah
(Member/Vice Chairman)

Tauseef H. Farooqi
(Chairman)

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National Electric Power Regulatory Authority (NEPRA)
Islamabad – Pakistan

GENERATION LICENCE

No. WPGL/58/2019

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

MORO POWER COMPANY (PVT.) LIMITED

Incorporated Under Section-32 of the Companies Ordinance 1984 (XLVII of 1984) Having Corporate Universal Identification No. 0091537, dated January 16, 2015

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

(Total Installed Capacity: 24.90 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 13th day of December Two Thousand & Nineteen and expires on 29th day of July Two Thousand & Forty-Six.

13 12 19

Registrar

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY ★ NEPRA ★ REGISTRAR

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, Commercial Code, if any, or the documents or instruments made by the Licensee pursuant to its generation licence, in each case of a binding nature applicable to the Licensee or, where applicable, to its affiliates and to which the Licensee or any of its affiliates may be subject;

(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 Code" means the distribution code prepared by the CPPA-G under the National Electric Power Regulatory Authority (Market Operator, Registration, Standards and Procedure) Rules, 2015 and approved by the Authority;

(i). "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;

(j). "Commissioning" means the undertaking of the Commissioning Tests of the generation facility/Wind Power Plant/Wind Farm as stipulated in the EPA;

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

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

(m). "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;

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

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(o). "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;

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

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

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

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

(t). "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;

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

(v). "Licensee" means **Moro Power Company (Private) Limited** or its successors or permitted assigns;

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

(x). "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;

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

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

(aa). "Power Purchaser" means any person or registered entity or licence holder which will be purchasing electric power from the Licensee, pursuant to an EPA for procurement of electric energy;

(bb). "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;

(cc). "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;

(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 Generation Rules and Licensing Regulations issued under the Act.

Article-2
Applicability of Law

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

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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, subject to the provisions of Section-14(B) of the Act.

4.2 Unless suspended or revoked earlier, the Licensee may apply for renewal of this Licence ninety (90) days prior to the expiry of the above term, in accordance with Applicable Law.

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.

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.

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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.

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

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shall be unused and brand new.

Article-16
Power Curve

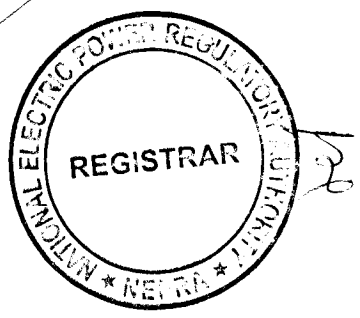
The power curve for the WTG provided by the manufacturer and as mentioned in Schedule-I of this generation licence, shall form the basis in determining the cumulative power curve of the generation facility/Wind Power Plant/Wind Farm.

Article-17
Compliance with Applicable Law

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

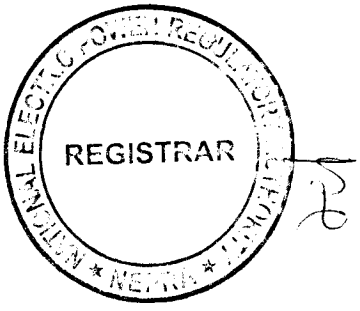
Article-18
Corporate Social Responsibility

The Licensee shall provide the descriptive as well as monetary disclosure of its activities pertaining to Corporate Social Responsibility (CSR) on annual basis.

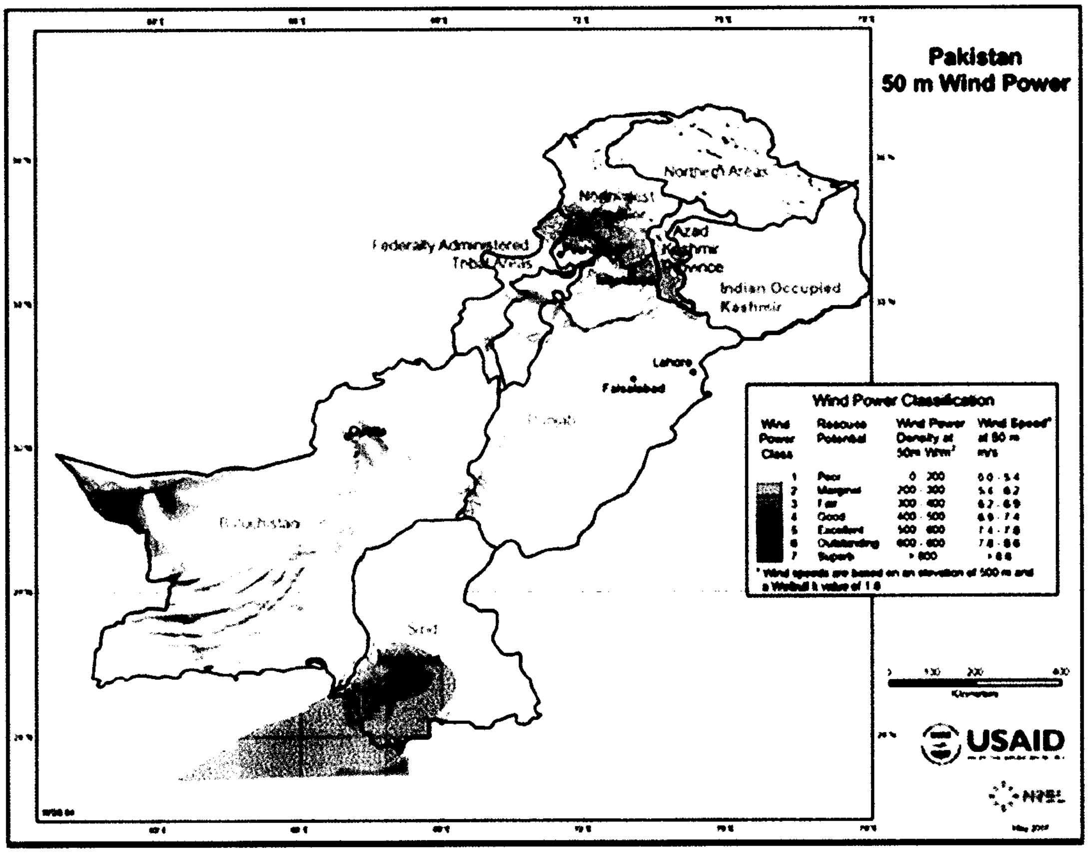


SCHEDULE-I

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.



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



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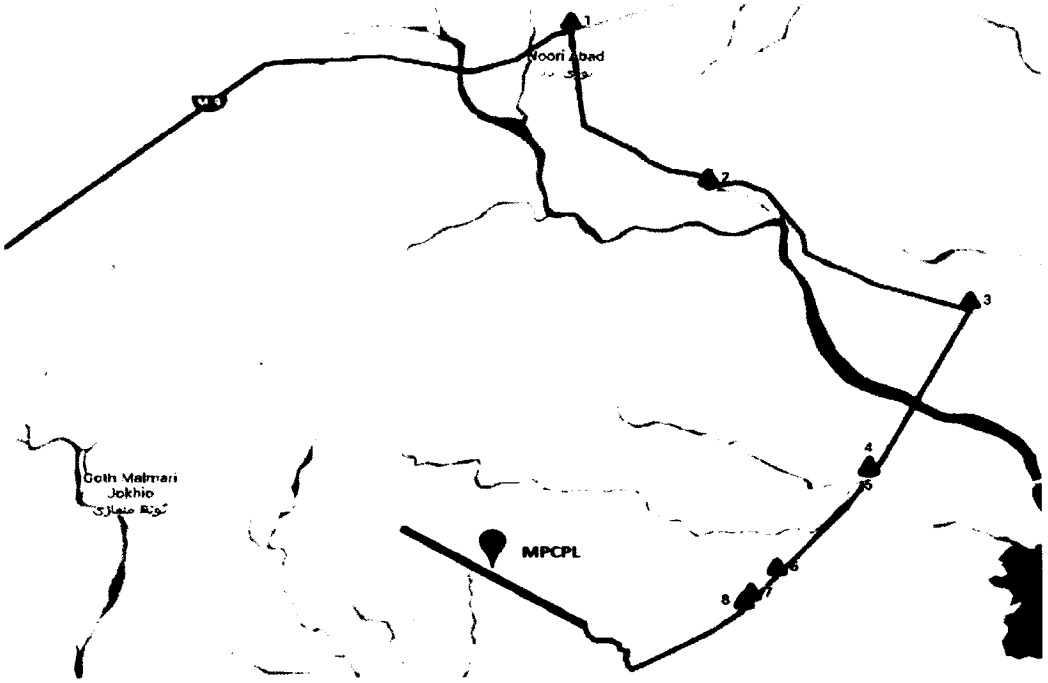
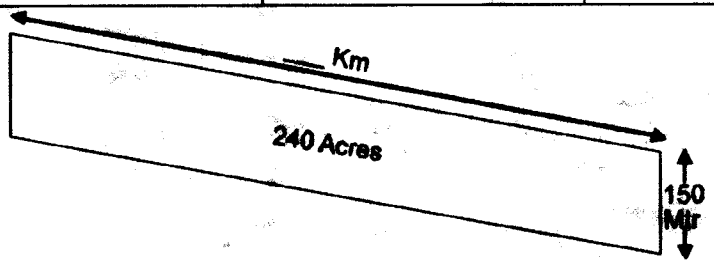
Layout and Land Coordinates of the Generation Facility/Wind Power Plant/Wind Farm of the Licensee



Boundary	Latitude	Longitude
M1	25® 2' 24.40" N	67® 39' 26.623" E
M2	25® 2' 20.527" N	67® 39' 23.37" E
M3	25® 0' 5.19" N	67® 42' 27'.69" E
M4	25® 0' 9.31" N	67® 42' 30.25" E



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

WTG1	369384	2765985
WTG2	369075	2766239
WTG3	368766	2766493
WTG4	368457	2766747
WTG5	368148	2767001
WTG6	367839	2767255
WTG7	367530	2767509
WTG8	367221	2767763

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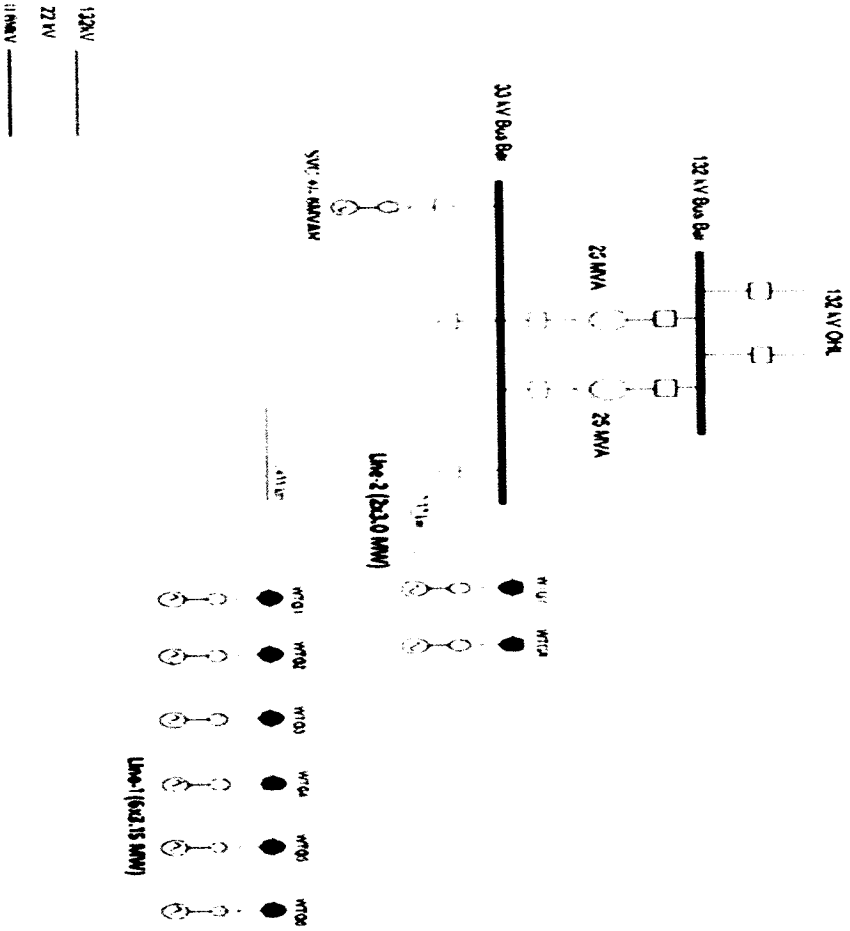
Single Line Diagram (Electrical System) of the Generation Facility/Wind Power Plant/Wind Farm of the Licensee



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. Moro Power Company (Pvt.) Limited (MPCPL) shall be dispersed to the National Grid.

(2). The project of MPCPL would be connected with the nearby national grid by looping in-out the existing 132 kV Circuit from Thatta towards the Wind Power Plant/Wind Farm of Tapal Wind.

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

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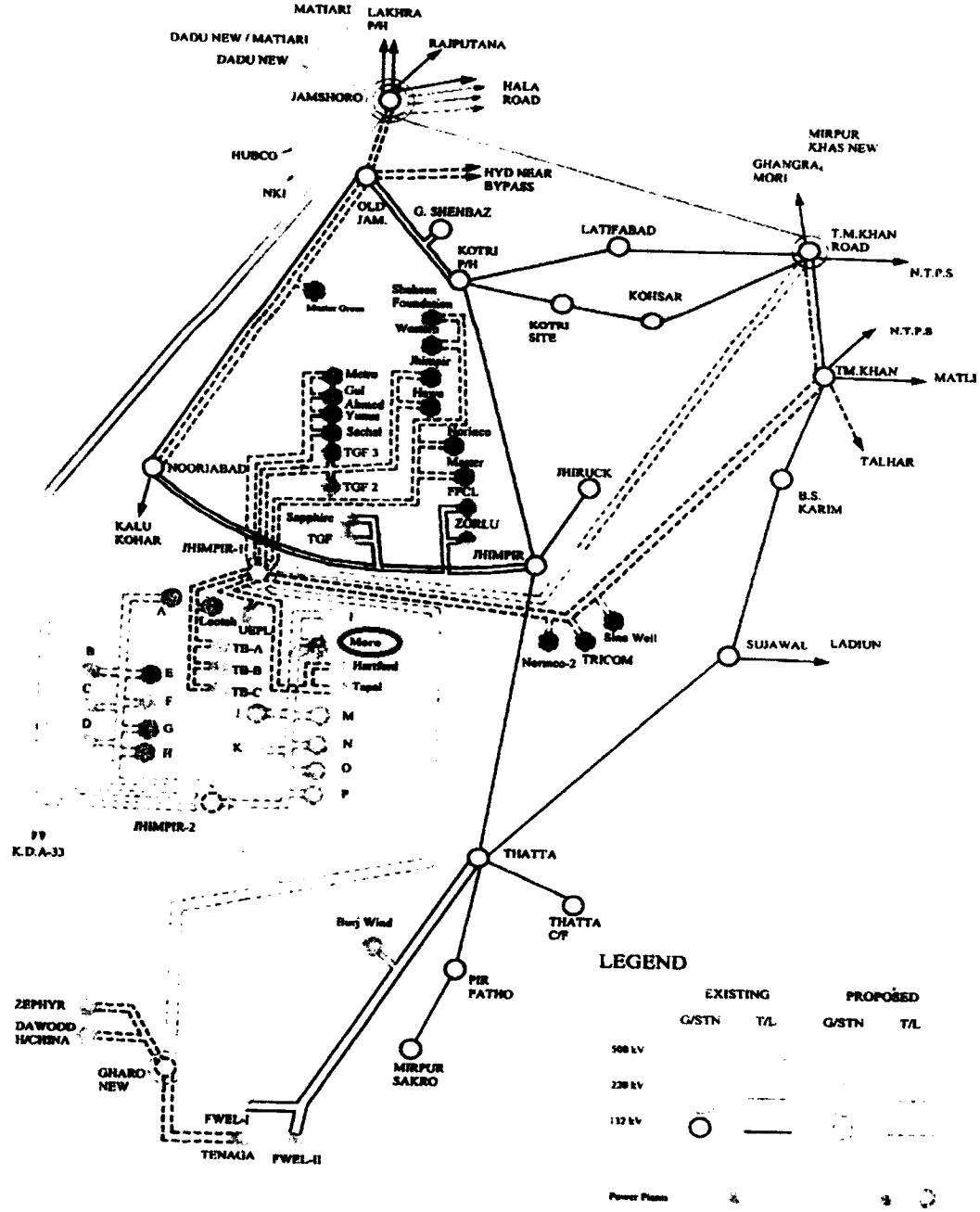
Schematic Diagram
for Interconnection Arrangement/Transmission Facilities for Dispersal of Electric Power from the Licensee



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Detail of Generation Facility/Wind Power Plant/ Wind Farm

(A). General Information

(i).	Name of Company/Licensee	Moro Power Company (Pvt.) Limited
(ii).	Registered Office of Company/Licensee	4-C, Ittehad Lane 12, Phase-II Ext., DHA Karachi
(iii).	Location of the generation facility/Wind Power Plant/Wind Farm	Deh Kohistan, Jhimpir District Thatta, in the Province of Sindh
(iv).	Type of the generation facility/Wind Power Plant/Wind Farm	Wind Power

(B). Wind Farm Capacity & Configuration

(i).	Wind Turbine type, Make & Model	Nordex-Acciona (AW125/300, AW125/3150)
(ii).	Installed Capacity of Wind Farm (MW)	24.90 MW
(iii).	Number of Wind Turbine Units/Size of each Unit (MW)	2x 3.0 MW + 6x3.150 MW

(C). Wind Turbine Details

(a).	**Rotor**	
(i).	Number of Blades	03
(ii).	Rotor Speed	8 to 15.7 rpm
(iii).	Rotor Diameter	116 m
(iv).	Swept Area	11958m²
(v).	Power Regulation	Combination of Blade pitch angle adjustments, and generator/convertor torque control
(vi).	Rated power at	12.5 m/s Air density of 1.225 kg/m³)
(vii).	Cut-in Wind Speed	3m/s

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(viii).	Cut-out Wind Speed	22m/s
(ix).	Survival Wind Speed	52m/s
(x).	Pitch Regulation	Electric motor drives a ring gear mounted to the inner race of the blade pitch bearing.
(b).	**Blades**	
(i).	Type Description	Pitching blade
(ii).	Blade Length	61.2m
(iii).	Material	Glass fiber reinforced polyester. PVC and balsa foam
(iv).	Weight	15,000 kg (per piece)
(c).	**Gearbox**	
(i).	Type	Planetary/Helical
(ii).	Gear Ratio	---
(iii).	Main shaft	Cast Iron GGG 700/400
(iv).	Oil Quantity	640L
(v).	Main Shaft Bearing	Roller Bearing mounted in a pillow block housing arrangement
(d).	**Generator**	
(i).	Power	3000 kW
(ii).	Voltage	690 V
(iii).	Type	Doubly fed Induction
(iv).	Speed	770-1300 rpm +10%
(v).	Coupling	Flexible Coupling
(vi).	Efficiency	≥97
(vii).	Weight	7,000 kg
(viii).	Power Factor	+/-0.95

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(e).	**Control System**	
(i).	Type	Automatic or manually controlled.
(ii).	Scope of monitoring	Remote monitoring of different parameters, e.g. temperature sensors, pitch parameters, speed, generator torque, wind speed and direction, etc.
(iii).	Recording	Production data, event list, long and short-term trends
(f).	**Brake**	
(i).	Design	Electromechanical pitch control for each blade (3 self-contained systems)
(ii).	Operational brake	Aerodynamic Brake achieved by feathering blades
(iii).	Secondary brake	Hydraulic parking brake
(g).	**Tower**	
(i).	Type	Tubular Steel Tower
(ii).	Hub heights	87.5 m
(h).	**Yaw System**	
(i).	Type Description	Active electrical motor power through geared ground with bolt bearings and hydraulic breaks.
(ii).	Yaw bearing	Roller Bearing
(iii).	Brake	Planetary Yaw drives
(iv).	Yaw driving device	4 Planetary yaw drives
(vi)	Speed	0.5 degree/s

(D). Other Details

(i).	COD of the generation facility/Wind Power Plant/Wind Farm	July 30, 2021 (Anticipated)
(ii).	Minimum Expected Useful Life of the generation facility/Wind Power Plant/Wind Farm from COD	25 Years

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Power Curve
of Wind Turbine Generator (WTG) of Nordex-Acciona 125/3150 (Tabular Form)

3	9	10	11	12	13	14	15	15	16	17
3.5	43	46	49	52	55	58	61	63	64	67
4	105	111	116	121	126	131	136	139	141	146
4.5	204	211	218	226	232	239	246	250	253	260
5	318	328	338	348	359	369	379	384	390	400
5.5	448	462	477	490	504	518	532	539	546	560
6	603	621	640	658	677	696	714	723	733	751
6.5	785	809	833	857	881	905	929	941	953	977
7	994	1024	1054	1084	1114	1144	1174	1189	1204	1234
7.5	1233	1270	1307	1343	1380	1417	1454	1472	1491	1527
8	1503	1548	1592	1636	1680	1723	1767	1789	1811	1852
8.5	1802	1854	1904	1952	2000	2048	2095	2119	2143	2185
9	2110	2165	2218	2263	2309	2359	2405	2428	2451	2487
9.5	2394	2446	2494	2531	2580	2623	2660	2678	2696	2724
10	2655	2697	2740	2764	2788	2835	2877	2896	2914	2948
10.5	2860	2901	2928	2963	2978	3003	3026	3036	3045	3061
11	2994	3025	3050	3072	3089	3104	3116	3121	3126	3133
11.5	3089	3104	3114	3122	3128	3133	3136	3138	3139	3141
12	3126	3132	3137	3141	3144	3146	3147	3148	3148	3149
12.5	3141	3144	3147	3148	3149	3150	3150	3150	3150	3150
13	3147	3148	3149	3149	3149	3150	3150	3150	3150	3150
13.5	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
14	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
14.5	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
15	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
15.5	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
16	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
16.5	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
17	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
17.5	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
18	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
18.5	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
19	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
19.5	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
20	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
20.5	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
21	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
21.5	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
22	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
22.5	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
23	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
23.5	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
24	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
24.5	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
25	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150

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Power Curve
of Wind Turbine Generator (WTG) of Nordex-Acciona 125/3000 (Tabular Form)

3	0	0	0	0	0	0	0	0	0	0
3.5	31	33	34	36	37	39	39	40	40	42
4	115	120	123	128	132	137	140	142	145	150
4.5	230	237	225	232	239	246	253	257	260	268
5	321	331	341	352	362	373	383	388	394	404
5.5	453	468	482	495	509	524	538	545	552	567
6	606	624	643	661	680	699	717	726	737	755
6.5	785	809	833	857	881	905	929	941	952	976
7	994	1024	1054	1084	1114	1144	1174	1189	1204	1234
7.5	1233	1270	1307	1343	1380	1417	1454	1472	1492	1530
8	1503	1548	1593	1639	1683	1726	1771	1795	1818	1863
8.5	1808	1862	1914	1966	2016	2066	2115	2140	2174	2226
9	2134	2193	2254	2303	2353	2402	2452	2476	2500	2538
9.5	2465	2520	2576	2614	2653	2682	2732	2751	2769	2797
10	2729	2775	2804	2826	2857	2882	2917	2927	2936	2938
10.5	2878	2911	2936	2954	2963	2969	2986	2990	3000	3000
11	2950	2965	2985	2994	3000	3000	3000	3000	3000	3000
11.5	2990	2995	3000	3000	3000	3000	3000	3000	3000	3000
12	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
12.5	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
13	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
13.5	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
14	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
14.5	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
15	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
15.5	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
16	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
16.5	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
17	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
17.5	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
18	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
18.5	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
19	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
19.5	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
20	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
20.5	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
21	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
21.5	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
22	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
22.5	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
23	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
23.5	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
24	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
24.5	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
25	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000

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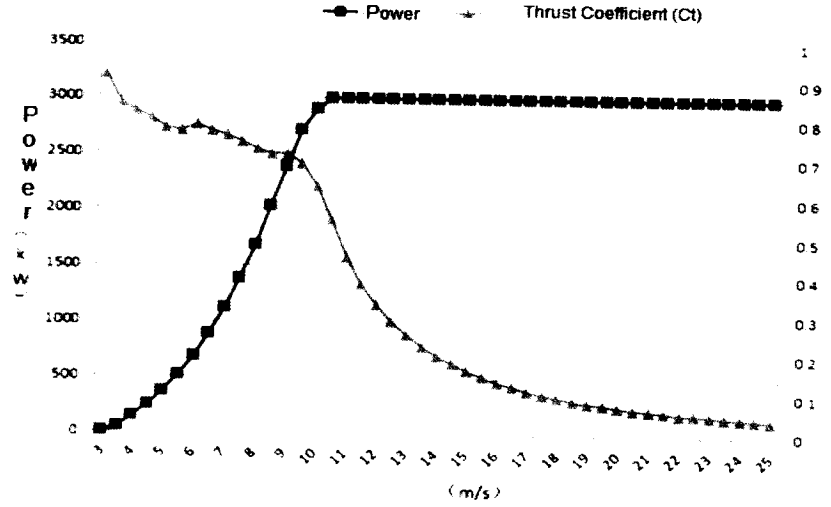
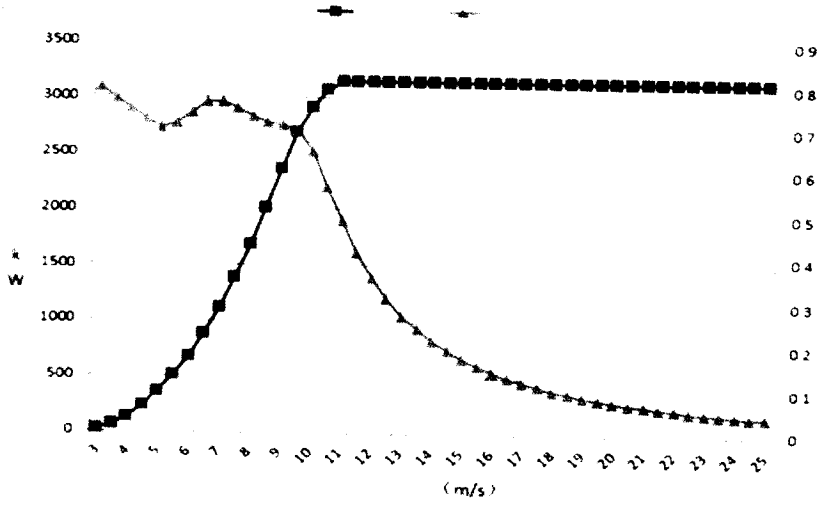
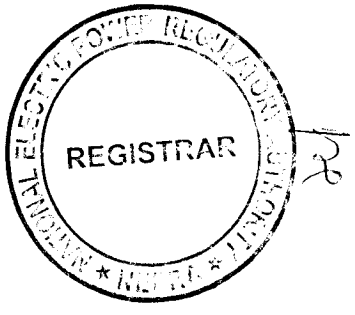
Power Curve
of Wind Turbine Generator (WTG) of Nordex-Acciona 125/3000 & 125/3150 (Graphical Form)



AW125/3000





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)	24.90
(2).	Total Annual Full Load Hours	3600
(3).	Average Wind Turbine Generator (WTG) Availability	97%
(4).	Total Gross Generation of the Generation Facility/Wind Farm (in GWh)	87.5
(5).	Array & Miscellaneous Losses (in GWh)	9.67
(6).	Availability Losses (in GWh)	3.75
(7).	Balance of Plant Losses (in GWh)	1.28
(8)	Annual Energy Generation (25-years equivalent Net AEP) (in GWh)	72.8
(9).	Net Capacity Factor	42.1%

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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