

ARTISTIC WIND POWER (PVT) LTD.

Registered office : Plot 4 & 8, Sector-25, Korangi Industrial Area, Karachi-74400 Pakistan
Phone : 92-21-111 016 016 Fax : 92-21-35075446 Email : energy@artisticmilliners.com

AWPL/OUT/NEPRA/GL/1-2019

20-Sep-19

TO,
THE REGISTRAR,
NATIONAL ELECTRIC POWER REGULATORY AUTHORITY,
NEPRA TOWER, ATTATURK AVENUE (EAST), SECTOR G-511,
ISLAMABAD, PAKISTAN.

SUBJECT: LICENSEE PROPOSED MODIFICATION OF ARTISTIC WIND POWER (PRIVATE) LIMITED IN RESPECT OF THE GENERATION LICENSE NO. WPGL/41/2017

Dear Sir,

Pursuant to the applicable laws of Pakistan, including the 'Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997' (the "**NEPRA Act**") and the rules and regulations made thereunder (including regulation 10(2) of the 'National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999' and the 'National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000', Artistic Wind Power (Private) Limited (*a company duly incorporated established and existing under the laws of Pakistan with its registered office at plot 4 & 8, Korangi Industrial Area, Karachi, Pakistan*) (the "**Licensee**"), being the holder of generation license no. **WPGL/41/2017** (the "**Generation License**"), submits to the National Electric Power Regulatory Authority (the "**Authority**"), for the authority's kind consideration and approval, the application (together with the information and annexures attached thereto) for licensee proposed modification of the generation license (the "**Generation License Modification Application**") to request modifications to the generation license to match the terms of the tariff determination dated November 19, 2018 No. NEPRA/TRF -419/ AWPL-20 17/18000-18002 issued to the licensee (the "**Generation License Modification**").

2. The Generation License Modification Application (including its annexures) are submitted in triplicate, together with:

(a) A pay order dated 18-September-19 amounting to PKR 326,946 /= (Three Hundred Twenty Six Thousand , Nine Hundred and Forty Six Only) Net 8 percent of tax, drawn in favour of the authority, as the application fee for the Generation License Modification Application;



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(b) Board resolution of the Licensee; and

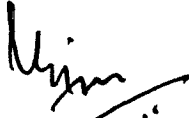
(c) Statement of authorized representative of the Licensee, Mr Rafique Khanani (The CFO/ Company Secretary of the Licensee).

3. In light of the submissions set out in the Generation License Modification application and the information attached to the same, the Authority is kindly requested to process the Generation License Modification application at the earliest, thereby enabling the licensee to proceed further with meeting the objectives, as set out in the Generation License Modification Application, critically dependent on the Generation License Modification.

Respectfully submitted,

For and on behalf of:

Artistic Wind Power Private Limited



Rafique Khanani

CFO and Company Secretary



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EXTRACT OF THE MINUTES OF THE BOARD OF DIRECTORS MEETING OF THE COMPANY HELD ON MONDAY SEPTEMBER 16, 2019

"RESOLVED THAT Company to prepare, finalise, deliver, file, apply and submit, pursuant to the applicable laws of Pakistan, including the 'Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997' (the NEPRA Act) and the rules and regulations made thereunder (including regulation 10(2) of the 'National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999' and the 'National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000') (the **"Applicable NEPRA Laws"**), **an application (together with all documents attached thereto)** (the **"Generation Licence Modification Application"**) before the **National Electric Power Regulatory Authority** (the **"Authority"**) for the Authority's approval of the modification (the **"Generation Licence Modification"**) of the Company's **Generation Licence No WPGL/41/2017** (the **"Generation Licence"**) in order for the Generation License to match the tariff determination received by the Company dated November 19, 2018 with reference no. **NEPRA/TRF--419/ A WPPL-20 17/18000-18002** (the **"Tariff Determination"**); and execute all required documents, make all filings, attend all hearings, provide all required information and pay all applicable fees, in each case, of any nature whatsoever."

"FURTHER RESOLVED THAT in respect of filing of application for Generation License (including any subsequent modifications) for submission to National Electric Power Regulatory Authority, **MR. YAQOOB AHMED (Chief Executive Officer)** and/ or **MR. MUHAMMAD RAFIQUE (Chief Financial Officer and Company Secretary)** be, singly, empowered and authorized for and on behalf of the Company to:

- (i) Review, execute, submit, and deliver the application for Generation License (including any subsequent modifications) and any related documentation required by National Electric Power Regulatory Authority for the determination of the application for generation license, including any contract, documents, power of attorney, affidavits, statements, letters, forms, applications, deeds, guarantees, undertakings, approvals, memorandum, amendments, letters, communications, notices, certificates, requests, statements and any other instruments of any nature whatsoever;
- (ii) Represent the Company in all negotiations, representations, presentations, hearings, conferences and /or meetings of any nature whatsoever with any entity (including, but in no manner limited to National Electric Power Regulatory Authority, any private parties, companies, partnerships, individuals, governmental and/or semi-governmental authorities and agencies, ministries, boards, departments, regulatory authorities and/or any other entity of any nature whatsoever);
- (iii) Sign and execute the necessary documentation, pay the necessary fees, appear before the National Electric Power Regulatory Authority as needed, and do all acts necessary for completion and processing of the application for



ARTISTIC WIND POWER (PVT) LTD.

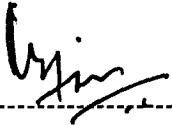
Registered office : Plot 4 & 8, Sector-25, Korangi Industrial Area, Karachi-74400 Pakistan
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Generation License including any modifications;

- (iv) Appoint or nominate any one or more officers of the Company or any other person or persons, singly or jointly, in his discretion to communicate with, make presentations to and attend the National Electric Power Regulatory Authority hearings;
- (v) Do all such acts, matters and things as may be necessary for carrying out the purposes aforesaid and giving full effect to the above resolutions/resolution."

"AND FURTHER RESOLVED THAT MR. YAQOOB AHMED (Director) and/or MR. MUHAMMAD RAFIQUE (Chief Financial Officer and Company Secretary), be and are hereby authorized to delegate all or any of the above powers in respect of the forgoing to any other officials of the Company as deemed appropriate."

IN WITNESS THEREOF, I hereunder set my hands as such Company Secretary and affixed the corporate seal of said company on *September 16, 2019*.



Muhammad Rafique
Company Secretary



SECTION 1
INTRODUCTION TO LICENSEE & THE PROJECT

I. INTRODUCTION TO LICENSEE & THE PROJECT

Artistic Wind Power (Private) Limited (a company duly established and existing under the laws of Pakistan with its principle office located at Plot 4&8, Korangi Industrial Area, Karachi) (the “**Licensee**”), being the applicant under this application for licensee proposed modification to generation license (the “**Generation License Modification Application**”), was set up and established in 2015, for the purposes of developing, setting up, implementing, constructing and operating of a 50MW wind power project (the “**Project**”) located at District Thatta Sindh, Pakistan (the “**Site**”).

II. The following documents are attached with the application

(a) ANNEXURE A (Shareholding Pattern)

(b) ANNEXURE B (Memorandum and Articles of Association);

(c) ANNEXURE C (Certificate of incorporation).

III. Key milestones of the Project are listed below.

<u>Milestones</u>	<u>Dates</u>
LOI	<u>September, 2015</u>
Generation license	<u>March, 2017</u>
Tariff Determination	<u>November, 2018</u>

IV. The Generation License

The licensee obtained a generation license no **WPGL/41/2017 in 2017**, a copy of the original generation license is attached herewith at Annexure- D1 for Authority’s reference (the “**Generation License**”).

V. Tariff Determination

The authority awarded its tariff determination to the company in November, 18. Reference no **NEPRA/TRF -419/ AWPPL-20 17/18000-18002**. A copy of the tariff is attached as Annexure D2 (the “**Tariff Determination**”).



SECTION2
BACKGROUND TO THIS GENERATION LICENSE
MODIFICATION APPLICATION



BACKGROUND TO THIS GENERATION LICENSE MODIFICATION APPLICATION

2. MISMATCH IN GENERATION LICENSE AND TARIFF

On obtaining the Tariff Determination, it was observed that the following factors were not aligned in the Generation License and Tariff Determination:

- Approved Capacity Factor;
- Anticipated Commercial Operations Date; and
- Generation License validity.

2.1 AVAILABLE CAPACITY FACTOR

It is highlighted that the **Generation License states a net capacity factor of thirty-five percent (35%) (reference Schedule-II, Generation License)** however the Authority has granted its Tariff Determination to the Company on the basis of the net annual plant capacity factor of **thirty-eight percent (38%)**.

2.2 ANTICIPATED COMMERCIAL OPERATIONS DATE

The Licensee has obtained its Generation License wherein the Authority has stated the anticipated Commercial Operations Date to be **December, 2019 (reference Generation License, Schedule-I)**. However, the same timeline is not aligned with the Tariff Determination.

The Tariff Determination (granted in November, 2018) has allowed one (1) year for financial close (i.e. November 2019) and a construction period of fifteen (15) months which would result in the Commercial Operations Date to be around **February, 2021**.

2.3 GENERATION LICENSE VALIDITY

We refer you to Section E(V) of Generation License which stipulates the duration of validity of generation license as twenty (20) Years while the tariff has been issued for twenty-five (25) Years.



2.4 THIS APPLICATION FOR MODIFICATION OF GENERATION LICENSE

Based on the requirement to match the necessary regulatory consents (i.e. Generation License) with the Tariff Determination, the Licensee has prepared and submitted this Generation License Modification Application for modification of its Generation License to request a modification that aligns the factors stated in paragraph 2.1 to 2.3 above -the text of such modification being expressly set out in this document (**Text Of Proposed Generation License Modification**) under **Section 3** (the Proposed Generation License Modification).

2.5 SUBMISSION

- PURSUANT to the applicable laws of Pakistan, including the NEPRA Act and the rules and regulations made thereunder ((including regulation 10(2) of the 'National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999 and the NEPRA Generation Rules, 2000) the Licensee submits for the Authority's kind and gracious consideration, this Generation License Modification Application for approval of the Proposed Generation License Modification to ensure that the Generation License is in line with the Project's Tariff Determination.
- This Generation License Modification Application is submitted in triplicate.
- This Generation License Modification Application is being submitted with the required generation License modification fee through a non-refundable bank draft/pay order in the amount of PKR 326,946/- (Three hundred Twenty Six thousand, Nine Hundred and Forty Six) Net 8 percent of tax, dated **18-Sep-19** in favour of the Authority.



SECTION 3

**TEXT OF PROPOSED GENERATION LICENSE
MODIFICATION**



3. Proposed text of Generation License modification

In view of the matters set out in this Generation License Modification Application, including, without limitation, to ensure that the terms of the Generation License are aligned with the Tariff Determination, the Proposed Generation License Modification:

3.1) Schedule II of the Generation License shall be replaced with the schedule attached herewith as ANNEXURE D3 (Schedule II to the Generation License) for the Authority's reference.

3.2) We note that Section E(v) of the Generation License states as follows:

“According to the information provided by AWPPL, its generation facility/Wind Power Plant/Wind Farm will achieve COD by December 31, 2019”

3.3) We further note that Section E(v) of the Generation License states as follows:

“AWPPL has requested that the term of the proposed generation License may be fixed as at least twenty (20) years. As AWPPL has consented for a shorter term of twenty (20) years, the Authority fixes the term of the generation License as twenty (20) years from COD of the project.”

The Licensee proposes that validity of the Generation License be raised to 25 years as to bring it on par with the Tariff Determination.



3.4) Part (D) (i) and (ii) of Schedule (1) to the Generation License as follows:

<u>COD of the generation facility fifteen (15) months from</u> <u>financial close achievement</u>	<u>February,</u> <u>2021</u>
<u>Minimum useful life of the generation facility from COD</u>	<u>25 years</u>



SECTION 4

**A STATEMENT OF THE REASONS IN SUPPORT OF THE
PROPOSED GENERATION LICENSE MODIFICATION**



**4. A STATEMENT OF THE REASONS IN SUPPORT OF THE PROPOSED
GENERATION LICENSE MODIFICATION**

4.1 Considerations in respect of mismatch of terms of Generation License and Tariff Determination:

4.1.1 It is re-emphasized that the modifications requested in this Generation License Modification Application are merely to match the terms of the Tariff Determination already granted to the Project by the Authority, in the manner further detailed in Section 3 of this Generation Licence Modification Application.



SECTION 5

**A STATEMENT OF IMPACT ON THE TARIFF, QUALITY OF SERVICE
AND PERFORMANCE BY THE LICENSEE OF ITS OBLIGATIONS
UNDER THE GENERATION LICENSE**



5. A STATEMENT OF IMPACT ON THE TARIFF, QUALITY OF SERVICE AND PERFORMANCE BY THE LICENSEE OF ITS OBLIGATIONS UNDER THE GENERATION LICENSE

5.1 IMPACT ON TARIFF

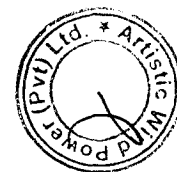
The Authority is highlighted that the Licensee is submitting before the Authority, for its kind consideration and approval, (in accordance with the applicable laws of Pakistan including the NEPRA Act and the rules and regulations made thereunder) this Modification Application in order to align the Generation Licence with the terms which the Authority has granted to the Licensee pursuant to the Tariff Determination.

5.2 IMPACT ON QUALITY OF SERVICE & PERFORMANCE

The Licensee confirms that the Licensee's quality of-service and its performance under the Generation License will not be affected due to such application as the same is merely to cater to the misalignment of the terms in the two documents granted by the Authority.

5.3 IMPACT ON THE OBLIGATIONS OF THE LICENSEE UNDER THE LICENSE

The approval of the proposed Generation License Modification would enable the Licensee in fulfilling its obligations under the Tariff Determination. The Authority is highlighted that the Licensee has to-date always strictly complied with the terms of the Generation License and commits to continue to do the same.



CONCLUSION

In light of the submissions, the relevant analysis and information contained in this Generation License Modification Application, along with the Annexures attached hereto, this Generation License Modification Application is submitted (pursuant to the applicable laws of Pakistan, including the 'Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997' and the rules and regulations made thereunder (including regulation 10(2) of the 'National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999' and the 'National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000')) for the Authority's kind consideration and for its approval of the Proposed Generation License Modification.

For and on behalf of

Artistic Wind Power (Private) Limited



Rafique Khanani



Company CFO and Secretary

ARTISTIC WIND POWER (PVT) LIMITED		
List of Annexures		
Sr.No	Annexure Name	Annexures
1	SHAREHOLDING PATTERN, ALONG WITH FORM A & 29	A
2	MEMORANDUM AND ARTICLES OF ASSOCIATION	B
3	CERTIFICATION OF INCORPORATION	C
4	COPY OF ORIGINAL GENERATION LICENSE	D1
5	COPY OF TARIFF DETERMINATION	D2
6	SCHEDULE-II TO THE GENERATION LICENSE (Proposed Modification)	D3





Registrar

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

No. NEPRA/R/DL/LAG-345/4220-26

March 28, 2017

Mr. Rafique Khanani
Chief Financial Officer
Artistic Wind Power (Private) Limited
Plot 4 & 8, Sector-25, Korangi Industrial Area,
Karachi.
Phone: 92-21-111016

**Subject: Grant of Generation Licence No. WPGL/41/2017
Licence Application No. LAG-345
Artistic Wind Power (Private) Limited (AWPPL)**

Reference: Your application vide letter No. Nil, dated May 24, 2016 (received on May 26, 2016).

Enclosed please find herewith Generation Licence No. WPGL/41/2017 granted by National Electric Power Regulatory Authority (NEPRA) to Artistic Wind Power (Private) Limited (AWPPL) for its 50.00 MW Wind Power Plant located at Jhimpir, District Thatta in the province of Sindh, pursuant to Section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997). Further, the determination of the Authority in the subject matter is also attached.

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

**Enclosure: Generation Licence
(WPGL/41/2017)**



28/03/17
(Syed Safeer Hussain)

Copy to:

1. Secretary, Ministry of Water and Power, A-Block, Pak Secretariat, Islamabad.
2. Chief Executive Officer, Alternative Energy Development Board (AEDB), 2nd Floor, OPF Building, G-5/2, Islamabad
3. Chief Executive Officer, NTDC, 414-WAPDA House, Lahore
4. Chief Executive Officer, CPPA-G, 6th Floor, Shaheed-r-Millat Secretariat, Jinnah Avenue, Blue Area, Islamabad
5. Chief Executive Officer, Hyderabad Electric Supply Company Limited (HESCO), WAPDA Offices Complex, Hussainabad, Hyderabad
6. Director General, Environment Protection Department, Government of Sindh, Complex Plot No. ST-2/1, Korangi Industrial Area, Karachi.

National Electric Power Regulatory Authority
(NEPRA)

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

March 16, 2017
Case No. LAG-345

(A). Background

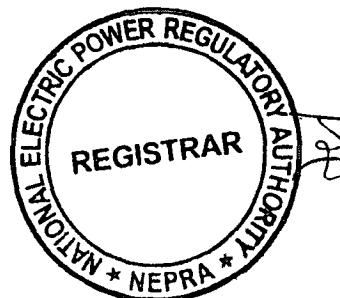
(i). In order to harness the potential of Renewable Energy (RE) in the country, Government of Pakistan (GoP) has formulated a policy for the development of RE resources. The policy titled "Policy for Development of Renewable Energy for Power Generation 2006 ("the RE Policy") is in field since 2006.

(ii). Under the above mentioned RE Policy, the Federal Government or the Provincial Governments can support the implementation of RE projects. Energy Department of Government of Sindh (EDGoS) issued Letter of Intent (LoI) to Artistic Wind Power (Private) Limited (AWPPL) for setting up a 50.00 MW wind based generation facility/Wind Power Plant/Wind Farm in the Jhimpir wind corridor of district Thatta, in the province of Sindh.

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

(B). Filing of Application

(i). In accordance with Section-15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 ("the NEPRA Act"),



AWPPL submitted an application on May 26, 2016 for grant of the generation licence.

(ii). The Registrar examined the submitted application to confirm its compliance with the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999 ("the Licensing Regulations"). It was observed that the application lacked some of required information/documentation as stipulated in the Licensing Regulations. Accordingly, Registrar directed AWPPL was to submit the missing information/documentation. AWPPL provided the same on June 07, 2016 and the Registrar submitted the case for consideration of the Authority.

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

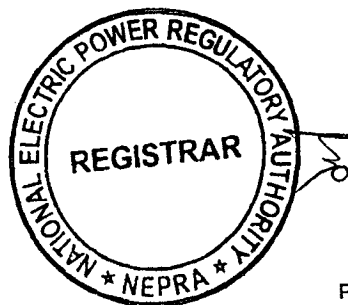
(iv). In consideration of the above, the advertisement was published in one (01) Urdu and one (01) English national newspapers i.e. "Daily Jang" and "Daily Times" respectively on June 28, 2016. Apart from the said, separate letters were also sent to abovementioned relevant stakeholders on June 28, 2016.



(C). Comments of Stakeholders

(ii). In reply to the above, the Authority received comments from four (04) stakeholders. These included Anwar Kamal Law Associates (ALKA), Pakistan Council of Renewable Energy Technologies (PCoRET), EDGoS and Central Power Purchasing Agency (Guarantee) Limited (CPPA-G). The salient points of the comments of said stakeholders are summarized below:-

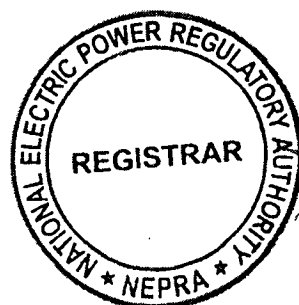
- (a). AKLA raised various issues being faced by the electric power sector of the country. It was highlighted that there is under-utilization of various existing generation facilities and resultantly there is surplus capacity. Therefore, induction of new power plants on "take or pay basis" etc. is not justifiable. AKLA contested that RE based generation facilities have higher upfront tariff and also enjoy the status of "must run" making such facilities not viable financially and economically. AKLA questioned the induction of RE projects in the scenario of reducing oil prices, proposed long term contracts of R-LNG, and the under construction coal power projects. AKLA opined that instead of setting up new power plants at costlier cost, efforts should be made to utilize the available generation capacity first to its full. Further, efforts should be made to encourage investors to setup new generation facilities under 'Take and Pay' regime in a competitive power market. ALKA opposed the grant of generation licence to AWPPL;
- (b). PCoRET submitted that it has no objection on the grant of generation licence to AWPPL;
- (c). EDGoS confirmed the issuance of Lol for the project and supported the grant of generation licence to AWPPL; and



(d). CPPA-G confirmed that NTDC had given assurance that the dispersal arrangement for evacuation of electric power from the project would be available by December 2019. CPPA-G submitted that AWPPL has planned installing 20 x 2.50 MW Wind Turbine Generator (WTG) of Gold Wind (GW-121/2.50MW). In this regard it is pertinent to mention that higher capacity WTG having same Hub height as that of GW-121/2.50MW are now available. Therefore, AWPPL may consider installing such WTG for the proposed project. In consideration of the said, AWPPL needs to ensure that the selected WTG complies with the provisions of the Grid Code as amended from time to time.

(ii). The Authority examined comments of the above stakeholders and found that PCoRET and EDGoS have supported the grant of generation licence in explicit terms. CPPA-G has made observations about the selection of WTG and compliance with the Grid Code. Whereas, AKLA overwhelmingly opposed the grant of generation licence to AWPPL. In view of the said, the Authority decided seeking the perspective of AWPPL on the comments of CPPA-G and AKLA.

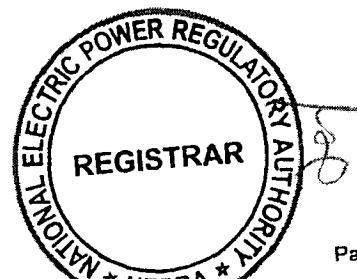
(iii). Regarding the objections of AKLA, it was submitted that comments are general in nature and are filed without fully understanding the dynamics of the electric power sector of the country and project financing etc. It was submitted that presently the country has the lowest contribution of RE in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



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

(v). In addition to the above, AWPPL acknowledged that new projects on coal and RLNG are being set up. However, AWPPL maintained that demand for the electric power would continue to rise therefore, efforts should be made to maintain the sizeable share of the RE in the overall energy mix of the country. Further to the said, AWPPL stressed that addition of RE will not only provide clean energy but result in savings of precious foreign exchange of the country. AWPPL submitted that in view of the current position of the electric power sector, it would be detrimental for the future projects and the sponsors changing from "take or pay" to "take and pay" as in the later situation there cannot be any guarantee for lenders for the required payments to pay off the debt.

(vi). On the comments/observations of CPPA-G, the company submitted that the selection WTG was made after a thorough analysis duly considering various world-class manufactures of WTG including General Electric, VESTAS, Gamesa, Nordex, Suzlon and Goldwind etc. After duly considering the various factors including (a). Wind Resource Position of the Corridor of Jhimipir (b). capital cost of equipment/WTG; (c). Lead time for Supply of Equipment/WTG; (d). Expected Energy Yield of WTG; (e). Reliability and Compliance with Grid Code; (f). Availability of suitable operation and maintenance teams (including easiness/availability spare parts for WTG etc., the company decided to select WTG of 2.50 MW of GW121/2.50 MW. It was clarified that proposed WTG is fourth generation (Type-IV) machine with



synchronous generator without any gearbox. The said features of selected WTG will result in more energy yield and stability for grid as stipulated in the Grid Code.

(vii). The Authority considered the above submissions of AWPPL and found the same satisfactory. Regarding comments of AKLA, the Authority observed that most of the comments are related to regulatory and policy decisions and reiteration of its earlier comments which have already been deliberated in the upfront tariffs and generation licence applications in detail. In view of the above, the Authority decided to process the application of AWPPL for the grant of generation licence as stipulated in the Licensing Regulations and NEPRA Licensing (Generation) Rules, 2000 ("the Generation Rules").

(D). Evaluation of the Case

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

(ii). The Authority has observed that main sponsor(s) of the project include Artistic Milliners (Private) Limited (AMPL) which is an export oriented textile unit involved in manufacturing of denim fabrics and apparel. It is pertinent to mention that AMPL is already developing an approximately 50.00 MW generation facility/Wind Power Plant/Wind Farm in the name of Hartford Alternative Energy (Private) Limited for which the Authority had granted a generation licence WPG/L/30/2016, dated April 26, 2016. Based on the financial strength and other evaluation parameters, EDGoS issued Lol and allocated 462 acres of land in Jhimpir, District Thatta, in the province of Sindh for setting up a generation facility/Wind Power Plant/Wind Farm of approximately 50.00 MW. In order to implement the project, the sponsors incorporated a Special



Purpose Vehicle (SPV) in the name of AWPPL under Section-32 of the Companies Ordinance 1984. The memorandum of association of SPV inter alia, includes the business of power generation and sale as one of its business objects.

(iii). The Authority has observed that according to the terms and conditions of the Lol, the SPV carried out a feasibility study of the project including inter alia, generation facility/Wind Power Plant/Wind Farm equipment details, micro-sitting details, power production estimates based on wind mast data of the project site, soil tests reports, technical details pertaining to selected wind turbine generator and other allied equipment to be used in the generation facility/Wind Power Plant/Wind Farm, electrical studies, environmental study and project financing etc. According to the above mentioned feasibility study, the SPV i.e. AWPPL will be setting up a 50.00 MW wind based generation facility/Wind Power Plant/Wind Farm in the Jhimpir wind corridor, district Thatta, in the province of Sindh. In this regard, AWPPL has confirmed that the proposed generation facility/Wind Power Plant/Wind Farm will be consisting of 20 x 2.50 MW of WTG (i.e. GW-121/2.5MW) of Xinjiang Goldwind Science & Technology Company Limited China (Goldwind). The Authority has observed that Goldwind is one of leading WTG manufacturer in the world and has its presence all over the world including Pakistan. In this regard, the Authority has observed that Goldwind has provided or providing WTG for four project with a cumulative capacity of around 300.00 MW. Further, the selected WTG are of Type-IV which is the latest generation of its type with characteristics supporting grid reliability and stability.

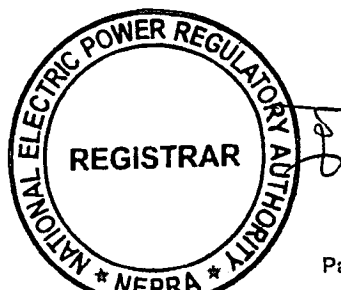
(iv). The Authority has observed that AWPPL carried out the required interconnection and system stability study for dispersal of electric power from the proposed generation facility/Wind Power Plant/Wind Farm. According to the said study, the dispersal of electric power will be made on 132 KV Voltage. The dispersal/interconnection arrangement will be consisting of a 132-KV Double Circuit (D/C) transmission line (measuring about 14 KM) for making an In-Out



of 132-KV Single Circuit transmission line connecting the wind farms of Cacho Wind Energy (Private) Limited and Act-2 Wind (Private) Limited. In this regard, NTDC has also confirmed that necessary arrangements will be made ensuring availability of the dispersal arrangement well before the Commercial Operation Date (COD) of the generation facility/Wind Power Plant/Wind Farm.

(v). The Authority considers that the proposed project, for which generation licence is being sought, is based on RE source and does not cause pollution as in the case of conventional power plants. However, the Authority considers that the operation of the generation facility/Wind Power Plant/Wind Farm may cause soil pollution, water pollution and noise pollution during construction and operation. In this regard, the Authority has observed that AWPPL also carried out the Initial Environment Examination Study and submitted the same for the consideration and approval of Environmental Protection Agency, Government of Sindh (EPAGoS). In this regard, EPAGoS issued a No Objection Certificate for the project.

(vi). In terms of Rule-3 of the Generation Rules, the Authority may grant a generation licence to any person to engage in the generation business. The said rule stipulates various conditions pertaining to the grant of generation licence as explained in Rule-3(2), Rule-3(3), Rule-3(4), Rule-3(5) and Rule-3(6) of the Generation Rules. In the particular case under consideration, the Authority has observed that conditions of Rule-3(2) and Rule-3(3) stands satisfied as AWPPL has provided details of location, technology, size, net capacity/energy yield, interconnection arrangements, technical limits, technical functional specifications and other details specific to the generation facilities. The provision of Rule-3(4) of the Generation Rules regarding holding a public hearing is not applicable as there is no issue which require this exercise. The Rule-3(5) of the Generation Rules stipulates that the Authority may refuse to issue a generation licence where the site, technology, design, fuel, tariff or other relevant matters pertaining to the generation facility proposed in an application for a generation licence are either not suitable on environmental



grounds or do not satisfy the least cost option criteria. In this regard, the Rule 3 of the Rules also stipulates the conditions pertaining to least cost option criteria which include (a). sustainable development or optimum utilization of the renewable or non-renewable energy resources proposed for generation of electric power; (b). the availability of indigenous fuel and other resources; (c). the comparative costs of the construction, operation and maintenance of the proposed generation facility against the preferences indicated by the Authority; (d). the costs and rights-of-way considerations related to the provision of transmission and interconnection facilities; (e). the constraints on the transmission system likely to result from the proposed generation facility and the costs of the transmission system expansion required to remove such constraints; (f). the short-term and the long-term forecasts for additional capacity requirements; (g). the tariffs resulting or likely to result from the construction or operation of the proposed generation facility; and (h) the optimum utilization of various sites in the context of both the short-term and the long-term requirements of the electric power industry as a whole.

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

(viii). The proposed project will result in optimum utilization of the RE which was earlier untapped, resulting in pollution free electric power. It is pertinent to mention that wind is an indigenous fuel and such fuels have a preference for the energy security. It is pertinent to mention that the Authority through its determination No. NEPRA/TRF-WPT/2017/1542-1544 January 27, 2017 has announced a Benchmark Levelized Tariff for the future wind projects



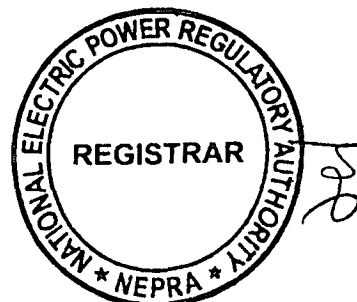
which works out to be U.S. cents 7.7342/kWh. The said determination envisages conducting bidding among companies/sponsors of the project(s) as stipulated in NEPRA Competitive Bidding (Approval Procedure) Regulations, 2014. The said regulation envisages that companies/sponsors of the project(s) will be offering a discount on the announced benchmark tariff meaning thereby that tariff for future wind projects will be less than U.S Cents 7.742/kwh which will be very competitive.

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

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

(E). Grant of Generation Licence

(i). The sustainable and affordable energy/electricity is a key prerequisite for socio-economic development of any country. In fact, the economic growth of any country is directly linked with the availability of safe, secure, reliable and cheaper supply of energy/electricity. In view of the said reasons, the Authority is of the considered opinion that for sustainable development, all indigenous power generation resources including RE must be developed on priority basis.



(ii). The existing energy mix of the country is heavily skewed towards thermal power plants, mainly operating on imported fossil fuel. The continuous import of fossil fuel not only creates pressure on the precious foreign exchange reserves of the country but is also an environmental concern. Therefore, in order to achieve sustainable development it is imperative that indigenous RE resources are given priority for power generation and their development is encouraged. The Energy Security Action Plan 2005 approved by GoP, duly recognizes this very aspect of power generation through renewable energy and envisages that at least 5% of total national power generation capacity (i.e. 9700 MW) to be met through RE resources by 2030.

(iii). The Authority considers that the proposed project of AWPPL is consistent with the provisions of Energy Security Action Plan 2005. The project will help in diversifying the energy portfolio of the country. Further, it will not only enhance the energy security of the country by reducing the dependence on imported fuel but will also help reduction in carbon emission by generating clean electricity, thus improving the environment.

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

(v). Rule-5(1) of the Generation Rules stipulates that the term of a generation licence must be consistent with the maximum expected useful life of the units comprised in a generating facility, except where an applicant for a

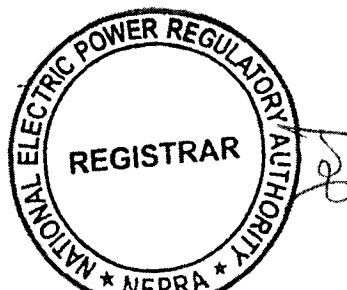


generation licence consents to a shorter term. According to the information provided by AWPPL, its generation facility/Wind Power Plant/Wind Farm will achieve COD by December 31, 2019 and will have a useful life of more than twenty (20) years from its COD. In this regard, AWPPL has requested that the term of the proposed generation licence may be fixed as at least twenty (20) years. As AWPPL has consented for a shorter term of twenty (20) years, the Authority fixes the term of the generation licence as twenty (20) years from COD of the project.

(vi). Regarding the tariff, it is hereby clarified that under Section-7(3)(a) of the NEPRA Act, determining tariff, rate and charges etc. is the sole prerogative of the Authority. In view of the said, the Authority through Article-6 of the generation licence directs AWPPL to charge the power purchaser only such tariff which has been determined, approved or specified by the Authority. The Authority directs AWPPL to adhere to the Article-6 of the generation licence in letter and spirit without any exception.

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

(viii). The proposed generation facility/Wind Power Plant/Wind Farm of AWPPL will be using renewable energy resource for generation of electric power. Therefore, the project may qualify for the carbon credits under the Kyoto Protocol. Under the said protocol, projects coming into operation up to the year 2020 can qualify for the carbon credits. AWPPL has informed that the project



will achieve COD by December 31, 2019 which is within the deadline of the Koyoto Protocol. In view of this, an article (i.e. Article-14) for carbon credits and its sharing with the power purchaser has been included in the generation licence. In view of the said, the Authority directs AWPPL to initiate the process in this regard at the earliest so that proceeds for the carbon credits are materialized. AWPPL shall be required to share the proceeds of the carbon credits with the power purchaser as stipulated in Article-14 of the generation licence.

(ix). In view of the above, the Authority hereby approves the grant of generation licence to AWPPL on the terms and conditions set out in the generation licence annexed to this determination. The grant of generation licence will be subject to the provisions contained in the NEPRA Act, relevant rules, regulations framed there under and other applicable documents.

Authority:

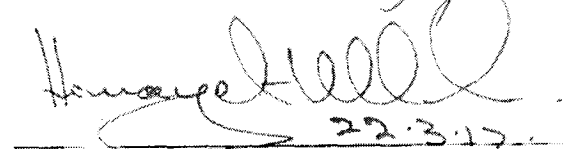
Maj. (R) Haroon Rashid
(Member)

 17/3/17

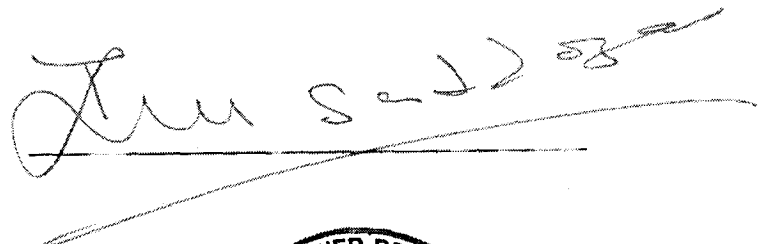
Syed Masood-ul-Hassan Naqvi
(Member)

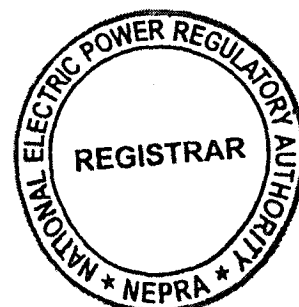
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Himayat Ullah Khan
(Member/Vice Chairman)

 22.3.17

Tariq Saddozai
(Chairman)






28/03/17

**National Electric Power Regulatory Authority
(NEPRA)**

Islamabad – Pakistan

GENERATION LICENCE

No. WPGL/41/2017

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

ARTISTIC WIND POWER (PRIVATE) LIMITED

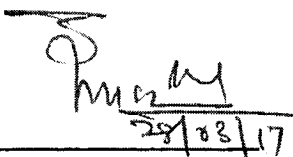
Incorporated under the Companies Ordinance, 1984 Having
Corporate Universal Identification No. 0095853, dated October 26, 2015

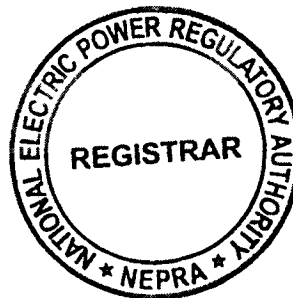
for its Generation Facility/Wind Power Plant Located at Jhimpir, District
Thatta, in the Province of Sindh

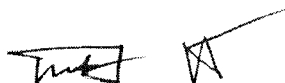
(Installed Capacity: 50.00 MW Gross ISO)

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

Given under my hand on 28th day of March Two Thousand &
Seventeen and expires on 30th day of December Two
Thousand & Thirty Nine.


28/03/17
Registrar





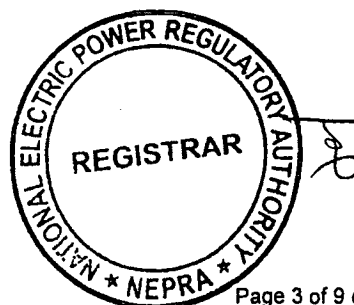
Article-1
Definitions

1.1 In this Licence

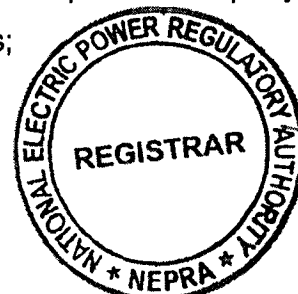
- (a). "Act" means the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 as amended or replaced from time to time;
- (b). "AEDB" means the Alternate Energy Development Board or any other entity created for the like purpose established by the GOP to facilitate, promote and encourage development of renewable energy in the country;
- (c). "Applicable Documents" mean the Act, the rules and regulations framed by the Authority under the Act, any documents or instruments issued or determinations made by the Authority under any of the foregoing or pursuant to the exercise of its powers under the Act, the Grid Code, the applicable Distribution Code, if any, or the documents or instruments made by the Licensee pursuant to its generation licence, in each case of a binding nature applicable to the Licensee or, where applicable, to its affiliates and to which the Licensee or any of its affiliates may be subject;
- (d). "Applicable Law" means all the Applicable Documents;
- (e). "Authority" means the National Electric Power Regulatory Authority constituted under Section-3 of the Act;
- (f). "Bus Bar" means a system of conductors in the generation facility/Wind Power Plant/Wind Farm of the Licensee on which the electric power from all the WTGs is collected for supplying to the Power Purchaser;



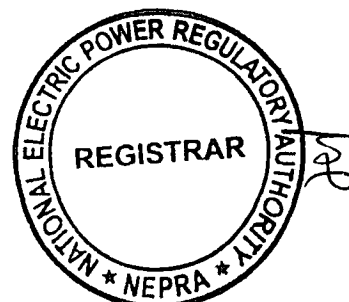
- (g). "Carbon Credits" mean the amount of Carbon Dioxide (CO₂) and other greenhouse gases not produced as a result of generation of electric energy by the generation facility/Wind Power Plant/Wind Farm and other environmental air quality credits and related emissions reduction credits or benefits (economic or otherwise) related to the generation of electric energy by the generation facility/Wind Power Plant/Wind Farm, which are available or can be obtained in relation to the generation facility/Wind Power Plant/Wind Farm after the COD;
- (h). "Commercial Operations Date (COD)" means the day immediately following the date on which the generation facility/Wind Power Plant/Wind Farm of the Licensee is commissioned;
- (i). "CPPA-G" means Central Power Purchasing Agency (Guarantee) Limited or any other entity created for the like purpose;
- (j). "Distribution Code" means the distribution code prepared by the concerned XW-DISCO and approved by the Authority, as it may be revised from time to time with necessary approval of the Authority;
- (k). "Energy Purchase Agreement (EPA)" means the energy purchase agreement, entered or to be entered into by and between the Power Purchaser and the Licensee, for the purchase and sale of electric energy generated by the generation facility/Wind Power Plant/Wind Farm, as may be amended by the parties thereto from time to time;
- (l). "Grid Code" means the grid code prepared and revised from time to time by NTDC with necessary approval of the Authority;



- (m). "GoP" means the Government of Pakistan acting through the AEDB which has issued or will be issuing to the Licensee a LoS for the design, engineering, construction, insuring, commissioning, operation and maintenance of the generation facility/Wind Power Plant/Wind Farm;
- (n). "HESCO" means Hyderabad Electric Supply Company Limited or its successors or permitted assigns;
- (o). "IEC" means "the International Electrotechnical 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 AEDB to the Licensee;
- (s). "Licensee" means **ARTISTIC WIND POWER (PRIVATE) LIMITED** or its successors or permitted assigns;
- (t). "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;
- (u). "NTDC" means National Transmission and Despatch Company Limited or its successors or permitted assigns;



- (v). "Policy" means the Policy for Development of Renewable Energy for Power Generation, 2006 of GoP as amended from time to time;
- (w). "Power Purchaser" means CPPA-G which will be purchasing electric energy from the Licensee either on behalf of all XW-DISCOs or any single XW-DISCO, pursuant to an EPA for procurement of electric energy;
- (x). "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;
- (y). "Licensing Regulations" mean the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999 as amended or replaced from time to time;
- (z). "Generation Rules" mean the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000 as amended or replaced from time to time;
- (aa). "Wind Power Plant/Wind Farm" means a cluster of WTGs situated in the same location of a generation facility used for production of electric energy;
- (bb). "Wind Turbine Generator (WTG)" means the machines installed at the generation facility/Wind Power Plant/Wind Farm with generators for conversion of wind energy into electric energy;
- (cc). "XW-DISCO" means "an Ex-WAPDA distribution company engaged in the distribution of electric power".



1.2 Words and expressions used but not defined herein bear the meaning given thereto in the Act or Generation Rules and Licensing Regulations issued under the Act.

Article-2
Applicability of Law

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

Article-3
Generation Facilities

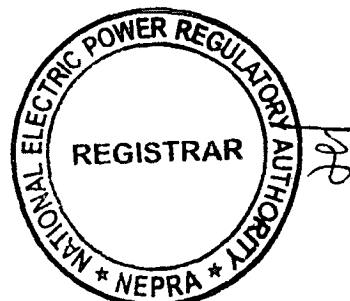
3.1 The location, size (capacity in MW), technology, interconnection arrangements, technical limits, technical functional specifications and other details specific to the generation facility/Wind Power Plant/Wind Farm of the Licensee are set out in Schedule-I of this licence.

3.2 The net capacity/Net Delivered Energy of the generation facility/Wind Power Plant/Wind Farm of the Licensee is set out in Schedule-II of this licence. The Licensee shall provide the final arrangement, technical and financial specifications and other specific details pertaining to its generation facility/Wind Power Plant/Wind Farm before its COD.

Article-4
Term of Licence

4.1 This licence shall become effective from the date of its issuance and will have a term of twenty (20) years from the COD of the generation facility/Wind Power Plant/Wind Farm of the Licensee.

4.2 Unless suspended or revoked earlier, the Licensee may apply for renewal of this Licence ninety (90) days prior to the expiry of the above term, as stipulated in the Licensing Regulations.



Article-5
Licence fee

The Licensee shall pay to the Authority the licence fee as stipulated in the National Electric Power Regulatory Authority (Fees) Rules, 2002 as amended or replaced from time to time.

Article-6
Tariff

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

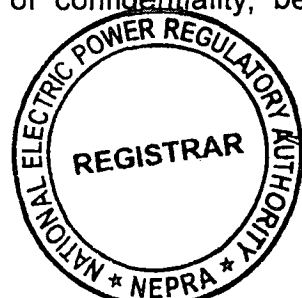
Article-7
Competitive Trading Arrangement

7.1 The Licensee shall participate in such manner as may be directed by the Authority from time to time for development of a Competitive Trading Arrangement. The Licensee shall in good faith work towards implementation and operation of the aforesaid Competitive Trading Arrangement in the manner and time period specified by the Authority. Provided that any such participation shall be subject to any contract entered into between the Licensee and another party with the approval of the Authority.

7.2 Any variation or modification in the above-mentioned contracts for allowing the parties thereto to participate wholly or partially in the Competitive Trading Arrangement shall be subject to mutual agreement of the parties thereto and such terms and conditions as may be approved by the Authority.

Article-8
Maintenance of Records

For the purpose of sub-rule(1) of Rule-19 of the Generation Rules, copies of records and data shall be retained in standard and electronic form and all such records and data shall, subject to just claims of confidentiality, be accessible by authorized officers of the Authority.



Article-9
Compliance with Performance Standards

The Licensee shall comply with the relevant provisions of the National Electric Power Regulatory Authority Performance Standards (Generation) Rules 2009 as amended or replaced from time to time.

Article-10
Compliance with Environmental & Safety Standards

10.1 The generation facility/Wind Power Plant/Wind Farm of the Licensee shall comply with the environmental and safety standards as may be prescribed by the relevant competent authority from time to time.

10.2 The Licensee shall provide a certificate on a bi-annual basis, confirming that the operation of its generation facility/Wind Power Plant/Wind Farm is in conformity with required environmental standards as prescribed by the relevant competent authority.

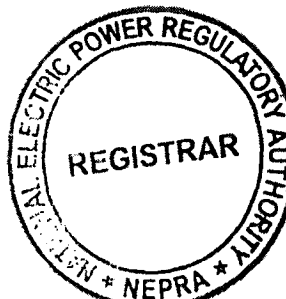
Article-11
Power off take Point and Voltage

The Licensee shall deliver the electric energy to the Power Purchaser at the outgoing Bus Bar of its generation facility/Wind Power Plant/Wind Farm. The Licensee shall be responsible for the up-gradation (step up) of generation voltage up to the required dispersal voltage level.

Article-12
Performance Data

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

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



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

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

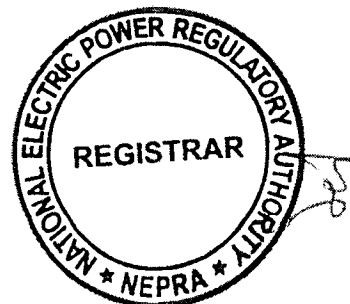
The Licensee shall process and obtain expeditiously the Carbon Credits admissible to the generation facility/Wind- Power Plant/Wind Farm. The Licensee shall share the said proceeds with the Power Purchaser as per the Policy.

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 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.



SCHEDULE-I

The Location, Size (i.e. Capacity in MW), Type of Technology, Interconnection Arrangements, Technical Limits, Technical/ Functional Specifications and other details specific to the Generation Facility of the Licensee are described in this Schedule.



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

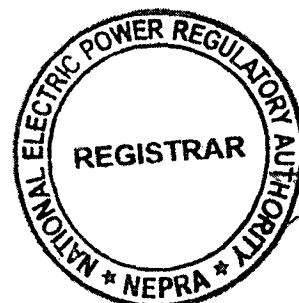
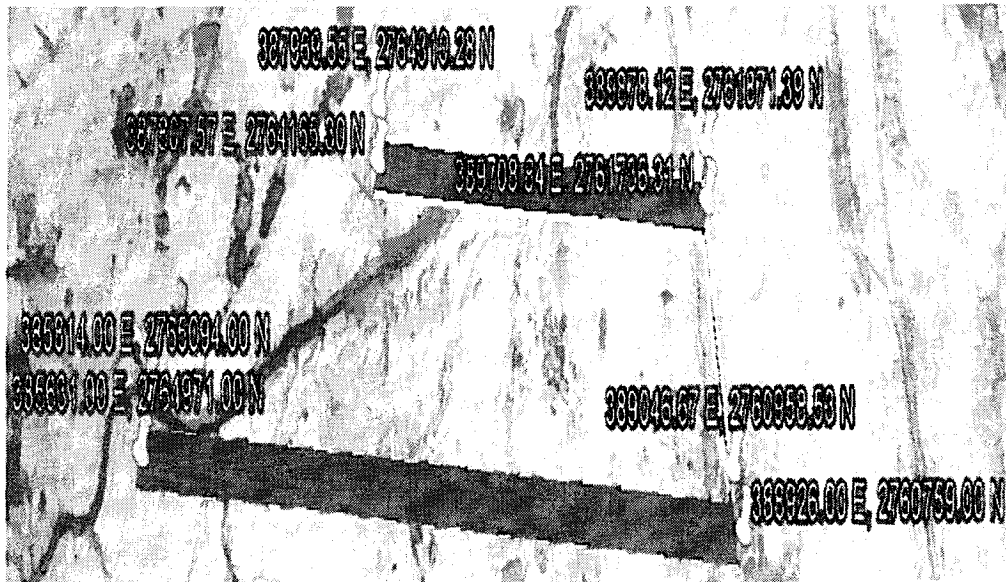


Land Coordinates
of the Generation Facility/Wind Power Plant/
Wind Farm

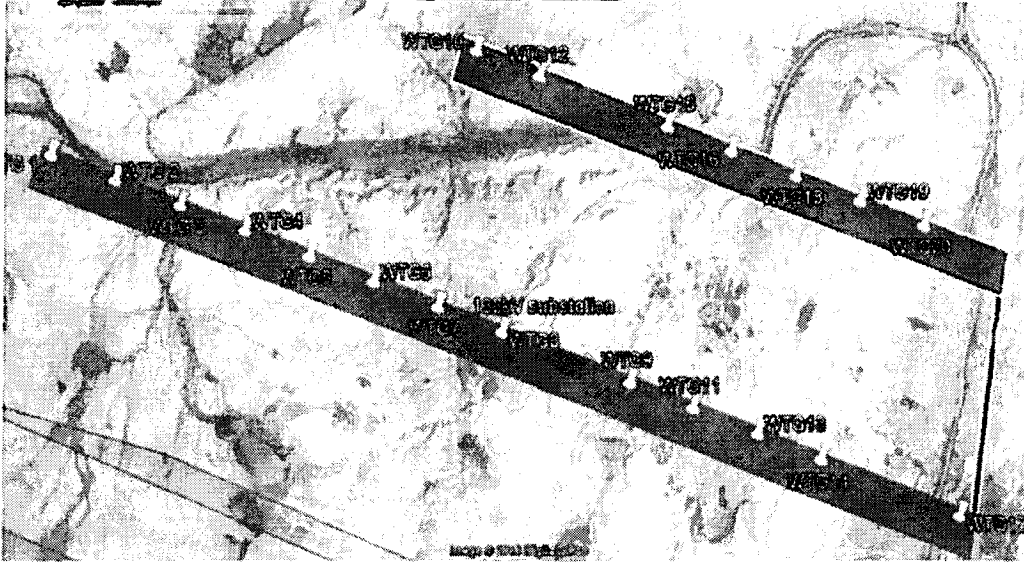
Total Land Area: 462 Acres

Geodetic Coordinates

Point No.	Latitude (N)	Longitude (E)
Boundary 1	27° 65' 094.70"	38° 58' 14.82"
Boundary 2	27° 64' 971.64"	38° 56' 31.01"
Boundary 3	27° 60' 759.29"	38° 89' 26.70"
Boundary 4	27° 60' 958.53"	38° 90' 49.67"
Boundary 5	27° 61' 871.39"	38° 98' 78.12"
Boundary 6	27° 61' 736.31"	38° 97' 08.84"
Boundary 7	27° 64' 165.30"	38° 78' 07.57"
Boundary 8	27° 64' 310.28"	38° 79' 69.55"



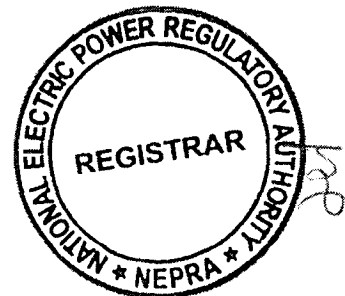
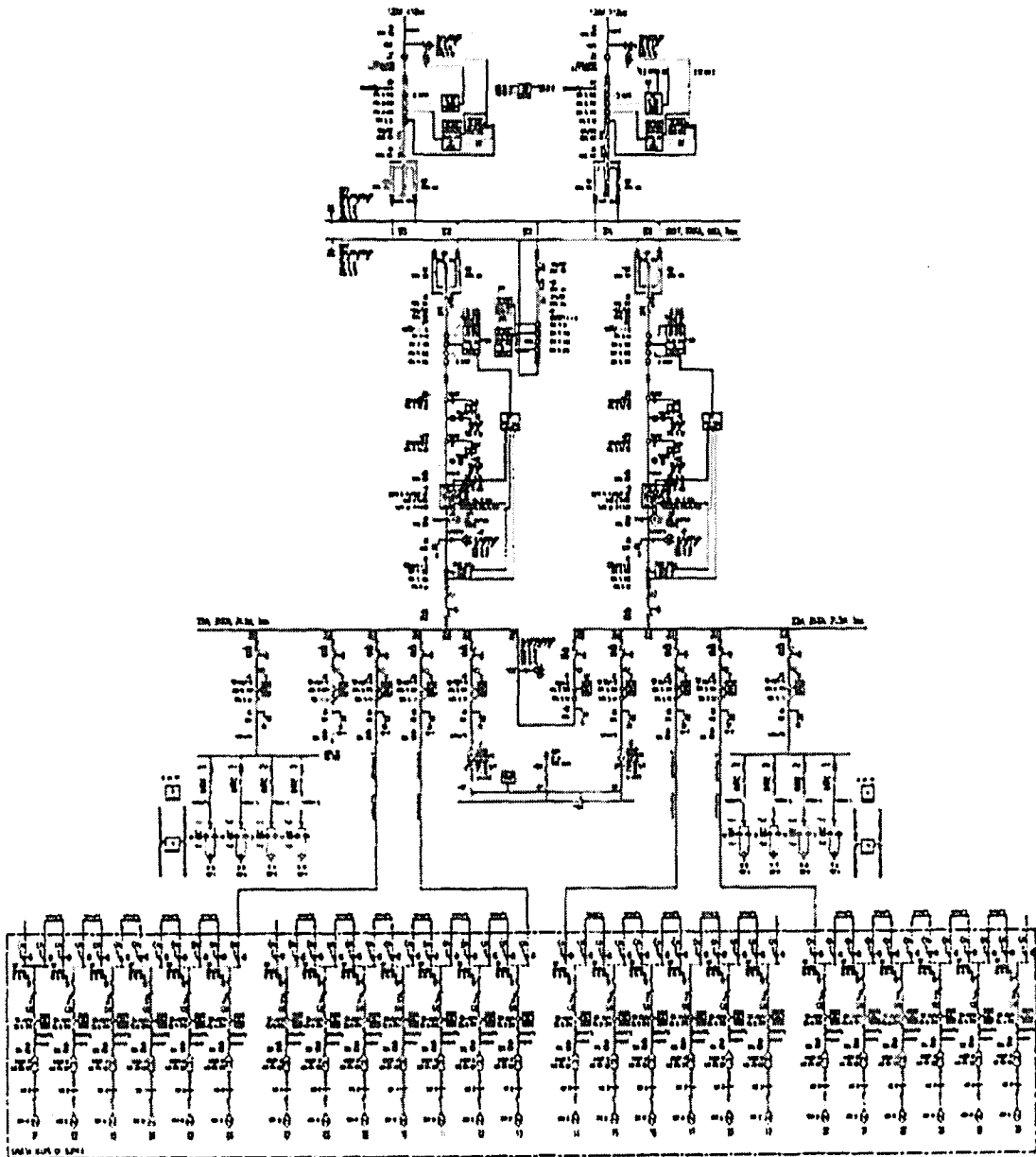
Micro-Sitting
of the Generation Facility/Wind Power Plant/
Wind Farm



Wind Turbine Generator (WTG)	Longitude (N)	Latitude (E)
WTG01	2,764,982	385,771
WTG02	2,764,696	385,994
WTG03	2,764,410	386,218
WTG04	2,764,124	386,441
WTG05	2,763,838	386,665
WTG06	2,763,552	386,889
WTG07	2,763,266	387,112
WTG08	2,762,980	387,336
WTG09	2,762,408	387,783
WTG10	2,764,170	387,935
WTG11	2,762,122	388,006
WTG12	2,763,885	388,159
WTG13	2,761,836	388,230
WTG14	2,761,550	388,453
WTG15	2,763,316	388,609
WTG16	2,763,031	388,834
WTG17	2,760,926	388,938
WTG18	2,762,746	389,059
WTG19	2,762,461	389,284
WTG20	2,762,176	389,509



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



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

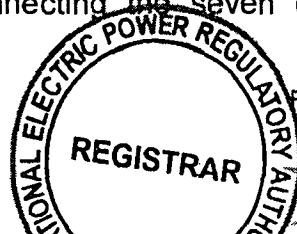
The electric power generated from the Generation Facility/Wind Power Plant/Wind Farm of Artistic Wind Power (Private) Limited (AWPPL) shall be dispersed to the National Grid through the load center of HESCO.

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

- (a). A 132-KV double circuit transmission line (measuring about 14 KM) for making In-Out of the 132-KV single circuit from Cacho Wind Energy (Private) Limited to Act-2 Wind (Private) Limited.

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

- (a). A new 220/132 KV Jhimpir-2 substation 3x250 MVA, 220/132 KV transformers;
- (b). 220 kV double circuit (D/C) transmission line, approximately 18 km long, on twin-bundled Greeley conductor for making In/Out of one circuit of the existing Jamshoro – KDA-33 D/C transmission line at Jhimpir-2;
- (c). 220 kV D/C transmission line, approximately 7 km long, on twin-bundled Greeley conductor for making In/Out of one of the planned Jhimpir-New (Jhimpir-1) - Gharo new D/C transmission line at Jhimpir-2; and
- (d). 132 kV D/C transmission line, approximately 50 km long on twin bundled Greeley conductor for connecting the seven (07) wind



power plants including Artistic Wind Power (Private) Limited with
Jhimpir-2.

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



Details
of Generation Facility/Wind Power Plant/
Wind Farm

(A). General Information

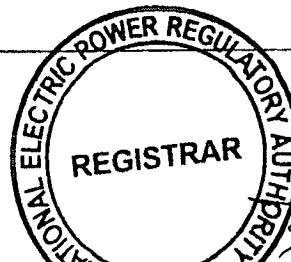
(i).	Name of the Company/Licensee	Artistic Wind Power (Private) Limited
(ii).	Registered/Business Office of the Company	Plot No. 4 & 8, Korangi Industrial Area, Karachi, Pakistan
(iii).	Location of the Generation Facility	Jhimpir, Nooriabad, District Thatta, Sindh
(iv).	Type of Generation Facility	Wind Power Plant

(B). Wind Farm Capacity & Configuration

(i).	Wind Turbine Type, Make & Model	Goldwind (GW 121/2500)
(ii).	Installed Capacity of the Generation Facility	50 MW
(iii).	Number of Units/Size of each Unit	20 x 2.50 MW

(C). Wind Turbine Details

(a). <u>Rotor</u>		
(i).	Number of Blades	3
(ii).	Rotor Speed	13.5 rpm
(iii).	Rotor Diameter	121 m
(iv).	Swept Area	11,595 m ²
(v).	Power Regulation	blade pitch angle adjustment
(vi).	Cut-in wind speed	3 m/s



(vii).	Rated power wind speed	9.3 m/s (air density = 1.225 kg/m ³)
(viii).	Cut-out wind speed	22 m/s
(ix).	Survival wind speed	52.5 m/s
(x).	Pitch regulation	Independent electrical pitch control system, belt transmission, one for each blade

(b). Blades

(i).	Blade Length	40.3 m
(ii).	Material	Fiberglass polyester resin

(c). Gear Box

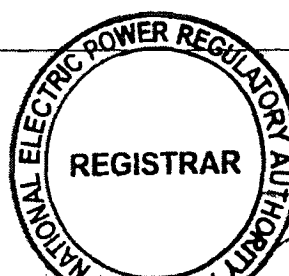
(i).	Type	Gearless Wind Turbine Generator
(ii).	Gear ratio	
(iii).	Weight	
(iv).	Oil quantity	
(v).	Main shaft bearing	

(d). Converter

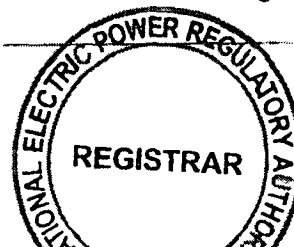
(i).	Type	Full load power converter, double PWM IGBT technology
(ii).	Rated Voltage	690 V
(iii).	Rated Current	2200 A

(e). Generator

(i).	Power	2,500 kW
(ii).	Voltage	690 V



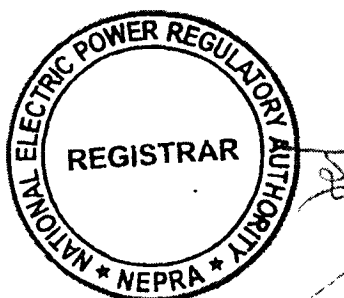
(iii).	Type	Permanent Magnet Direct Drive Synchronous Generator
(iv).	Enclosure class	IP 54
(v).	Coupling	PMDD uses a generator close coupled to the rotor
(vi).	Efficiency	$\geq 98\%$
(vii).	Power Factor	± 0.95 (Leading to Lagging)
(f). <u>Yaw System</u>		
(i).	Yaw Bearing	4 points-contact, double row ball slewing ring
(ii).	Brake	Hydraulic Disc Brakes
(iii).	Yaw Drive	4 x electrical asynchronous Motors with 4 x planetary gears, 4 stages
(iv).	Speed	0.5 degree/s
(g). <u>Control System</u>		
(i).	Type	Microprocessor Controlled, DFU (SCADA)
(ii).	Grid Connection	Full Load IGBT Converter
(iii).	Scope of Monitoring	Remote monitoring of different parameters, e.g. temperature sensors, pitch parameters, speed, generator torque, wind speed and direction, etc.
(iv).	Recording	Production data, event list, long and short-term trends
(h). <u>Brake</u>		
(i).	Design	Three independent systems, fail safe (individual pitch)
(ii).	Operational Brake	Aerodynamic brake achieved by feathering blades.
(iii).	Secondary Brake	Hydraulic rotor brake for generator



(i). <u>Tower</u>		
(i).	Type	Tubular steel tower
(ii).	Hub Heights	90 m

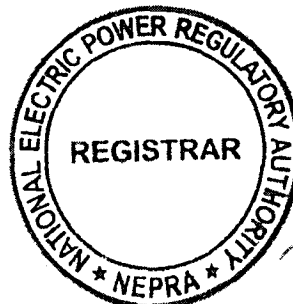
(D). Other Details

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



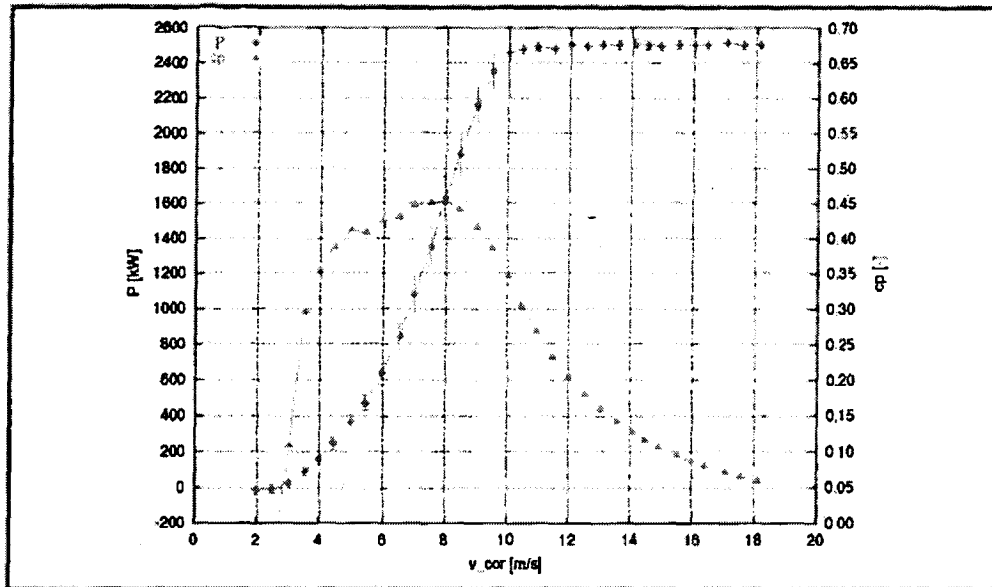
Power Curve
of Wind Turbine Generator
Goldwind (GW 121/2500)
(Tabular)

3	63
3.5	113
4	188
4.5	279
5	384
5.5	513
6	666
6.5	876
7	1114
7.5	1365
8	1640
8.5	1904
9	2181
9.5	2428
10	2494
10.5	2520
11	2530
11.5	2538
12	2545
12.5	2550
13	2550
13.5	2550
14	2550
14.5	2550
15	2550
15.5	2550
16	2550
16.5	2550
17	2550



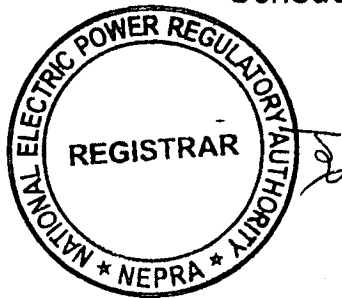
Power Curve
of Wind Turbine Generator
Goldwind (GW 121/2500)
(Graphical)

Power Curve according to IEC 61400-12-1



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

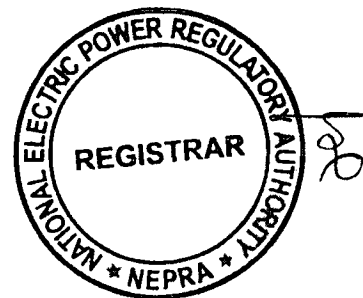


SCHEDULE-II

(1).	Total Installed Gross ISO Capacity of the Generation Facility /Wind Farm (MW)	50 MW
(2).	Total Annual Full Load Hours	3066.0 Hrs
(3).	Average Wind Turbine Generator (WTG) Availability	98.0 %
(4).	Total Gross Generation of the Generation Facility/Wind Farm (in GWh)	173.74 GWh
(5).	Array & Miscellaneous Losses GWh	13.62 GWh
(6).	Availability Losses GWh	3.41 GWh
(7).	Balance of Plant Losses GWh	3.41 GWh
(8).	Annual Energy Generation (20 year equivalent Net AEP) GWh	153.30 GWh
(9).	Net Capacity Factor	35.00 %

Note

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



ANNEXURE D 2
TARIFF
ARTISTIC WIND POWER





Registrar

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

No. NEPRA/TRF-419/AWPPL-2017/18000-18002
November 19, 2018

Subject: Determination of the National Electric Power Regulatory Authority in the matter of Tariff Petition filed by Artistic Wind Power (Pvt.) Limited for Determination of Reference Generation Tariff in respect of 50 MW Wind Power Project [Case # NEPRA/TRF-419/AWPPL-2017]

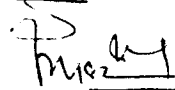
Dear Sir,

Please find enclosed herewith the subject Determination of the Authority along with Annexure-I & II (26 pages) in Case No. NEPRA/TRF-419/AWPPL-2017.

2. The Determination is being intimated to the Federal Government for the purpose of notification in the official gazette pursuant to Section 31(7) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

3. The Order part along with Annexure-I & II of the Authority's Determination are to be notified in the official Gazette.

Enclosure: As above


19 11 18
(Syed Safer Hussain)

Secretary
Ministry of Energy (Power Division)
'A' Block, Pak Secretariat
Islamabad

CC:

1. Secretary, Cabinet Division, Cabinet Secretariat, Islamabad.
2. Secretary, Ministry of Finance, 'Q' Block, Pak Secretariat, Islamabad.



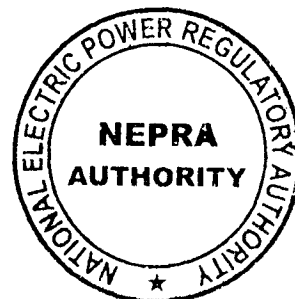
**DETERMINATION OF THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY IN THE
MATTER OF TARIFF PETITION FILED BY ARTISTIC WIND POWER (PVT) LIMITED FOR
DETERMINATION OF REFERENCE GENERATION TARIFF IN RESPECT OF
50MW WIND POWER PROJECT**

1. Artistic Wind Power (Pvt) Ltd. ("AWPPL" or "the petitioner" or "the company/project company") vide its letter dated December 4, 2017 filed a tariff petition before National Electric Power Regulatory Authority ("NEPRA" or the Authority") under Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 ("NEPRA Act") and NEPRA (Tariff Standards & Procedure) Rules, 1998 ("Tariff Rules, 1998") for determination of reference generation tariff with respect to its 50 MW wind power project ("project") envisaged to be set up at Jhimpir, Nooriabad, District Thatta, Sindh. The petitioner requested for the approval of levelized tariff of US Cents 7.2350/kWh (Rs. 7.5967/kWh) over the tariff control period of 25 years.

SUBMISSIONS OF THE PETITIONER

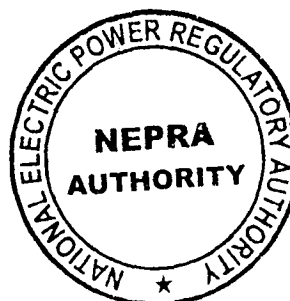
2. The petitioner submitted that it is a company established under the laws of Pakistan. Letter of Intent ("LOI") was issued to AWPPL by Directorate of Alternative Energy, Government of Sindh ("GOS") on September 01, 2015 for establishing a 50 MW wind power generation project. On January 03, 2018, the validity of the said LOI was extended by GOS till April 29, 2019.
3. AWPPL also submitted the minutes of the meeting of Panel of Experts ("POE") of GOS dated October 31, 2017 which was conducted to review the feasibility study submitted by the AWPPL. In that meeting, the POE of GOS approved the feasibility study of the project and advised the project company for further perusal of tariff and generation license. The generation license was issued by NEPRA to AWPPL on March 28, 2017.
4. Summary of the key information provided by the petitioner is as follows:

Project company	: Artistic Wind Power (Pvt.) Ltd.
Sponsors	: Artistic Milliners (Pvt.) Ltd.
Capacity	: 50 MW
Project location	: Jhimpir, District Thatta, Sindh





Land area	:	462 acres (allocated by GOS)	
Concession period	:	25 years from Commercial Operations Date	
Power Purchaser	:	Central Power Purchasing Agency Guarantee Limited	
Wind turbine	:	Gold Wind	
Model	:	GW 121-2.5	
Plant capacity factor	:	37.5%	
Annual energy generation	:	164.25 GWh	
EPC contractor	:	Hydrochina Corporation	
Project cost	:	USD in millions	
EPC cost	:	75.500	
Non-EPC & Project Development Cost	:	3.860	
Insurance during construction	:	0.570	
Financial Charges	:	2.300	
Interest during construction	:	4.920	
Total project cost	:	87.150	
Financing structure	:	Debt: 75% : Equity: 25%	
Debt composition	:	50% local & 50% foreign loan	
Interest rate	:	3 month KIBOR (6%) + 2.5%	
	:	3 month LIBOR (0.6%) + 4.5%	
Debt repayment period	:	13 years	
Return on equity	:	15% IRR based	
O&M cost	:	USD 1.90 million per annum	
Insurance cost	:	USD 0.38 million per annum	
		PKR/kWh	US\$/kWh
Levelized Tariff	:	7.5967	7.2350
Exchange rate	:	1 USD = PKR 105	



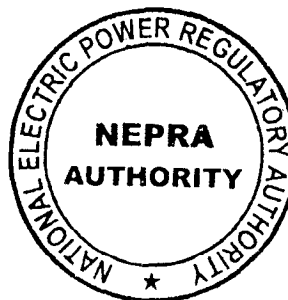


PROCEEDINGS:

5. The Authority considered the tariff petition and admitted the same for further processing. Notice of Admission/Hearing containing salient features of the petition, hearing schedule and issues framed for hearing was published in two national daily newspapers on March 17, 2018. Through the said notice, NEPRA invited comments and intervention requests from the interested parties within fourteen (14) days of publication of notice. Tariff petition and Notice of Admission/Hearing were also published on NEPRA's website for information of general public. Individual Notices of hearing were also sent to the stakeholders, considered to be relevant, and the petitioner on March 20, 2018 for participation in the proceedings.
6. The hearing on the subject matter was held on April 4, 2018 (Tuesday) at 11:00 A.M. at NEPRA Tower, Islamabad, which was attended by a large number of participants including the petitioner, representatives of National Transmission & Despatch Co. Ltd. ("NTDCL"), Private Power & Infrastructure Board ("PPIB"), GOS, etc.
7. In response to Notice of Admission/Hearing, comments were received from Central Power Purchasing Agency (Guarantee) Limited (CPPA-G) dated March 26, 2018 whereas no intervention request was received from any party. The comments of CPPA-G are discussed in the relevant paragraphs of this determination.

ISSUES FRAMED:

8. Following is the list of issues that were framed by the Authority for the hearing:
 - i. Whether the details provided for EPC cost are sufficient and whether the claimed EPC cost is competitive and comparative and based on the firm and final agreement(s)? and
 - ii. Whether the NEPRA (Selection of EPC Contractor by IPPs) Guidelines, 2017 have been fully complied with?
 - iii. Whether the details provided for Non-EPC cost are sufficient and claimed Non-EPC cost is justified? Also provide justification for land requirement as claimed by the petitioner.
 - iv. Whether the claimed annual energy generation and corresponding plant capacity factor are reasonable and justified? And



- v. Whether the petitioner's proposed wind turbine technology satisfies the international standards of quality and operation?
 - vi. Whether the claimed O&M costs are justified? Provide rationale of claiming foreign & local O&M cost.
 - vii. Whether the claimed insurance during operation cost is justified?
 - viii. Whether the claimed return on equity is justified?
 - ix. Whether the claimed financing/debt terms are justified?
 - x. Whether the claimed construction period is justified?
 - xi. Any other issue with the approval of the Authority.
9. The issue wise submissions of the petitioner and the Authority's findings and decision thereon are as under:

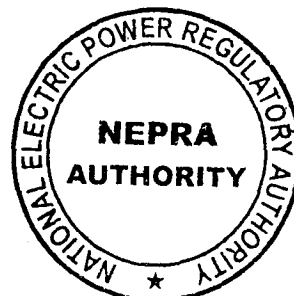
Whether the details provided for EPC cost are sufficient and whether the claimed EPC cost is competitive and comparative and based on the firm and final agreement(s)? and

Whether the NEPRA (Selection of EPC Contractor by IPPs) Guidelines, 2017 have been fully complied with?

10. The petitioner has claimed USD 75.500 million on account of Engineering, Procurement and Construction ("EPC") cost in its tariff petition. In this regard, the petitioner submitted copies of EPC Contracts signed on November 22, 2017. The breakup of the EPC cost as provided by the petitioner is given hereunder:

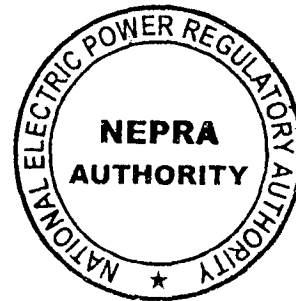
EPC cost	(USD in million)
Offshore contract	64.500
Onshore contract	11.000
Total	75.500

11. The petitioner submitted that it has carried out a competitive bidding process to select EPC contractor and Wind Turbine Generator ("WTG") manufacturer for the project. Request for Proposal ("RFPs") was circulated to the parties working in Pakistan to award the turnkey EPC contracts for the development of the project. Following EPC contractor/WTG manufacturers were issued the RFP on February 18, 2016:

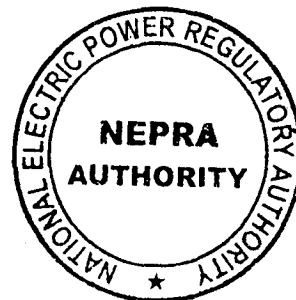


- i. Vestas Denmark
- ii. CSIC China
- iii. HydroChina Corporation China
- iv. Nordex Germany
- v. Descon Pakistan
- vi. Orient Pakistan with Gamesa Spain

12. The petitioner submitted that post circulation of RFP, bid clarification meetings were held with the parties. Last date for submission of bids was March 11, 2016 which was extended till March 31, 2016. Later on upon the request of Vestas and Descon, further extension for submission of bids was granted up to April 07, 2017. All parties submitted the bids except Orient Pakistan. Two (02) envelope bidding procedure was adopted whereby technical and financial bids were submitted in two separate envelopes. Technical bids were evaluated as per pre-defined criteria and bidders qualifying technical evaluation were then evaluated on the basis of financial bids. A list was given in the petition for the criteria designed and followed for the tender evaluation. The petitioner submitted that based on combined technical and financial evaluation, Hydrochina Corporation with Goldwind WTG (GW 121-2.5) was declared as the first preferred bidder in May 2016. Afterwards, based on due diligence and negotiation process, the Offshore contract was signed with Power Construction Corporation Of China Limited on November 22, 2017 which primarily relates to procurement and supply of electrical and mechanical equipment outside Pakistan and Onshore contract was signed with Hydrochina International Engineering Company Limited on November 22, 2017 which comprise of civil works, erection, commissioning, testing etc. The EPC contractor will install 20 x GW 121-2.5 at 90m hub height WTGs for the project. The petitioner submitted that as the company had already declared preferred bidder for signing of EPC contract in May 2016, therefore, NEPRA (Selection of Engineering, Procurement and Construction Contractor by Independent Power Producers) Guidelines, 2017 are not applicable to the instant case.
13. NEPRA vide letter dated May 11, 2018 directed AWPPL to submit complete documents related to bidding process followed by the project company for selection of EPC Contractor. In response, the petitioner submitted all the documents with respect to the bidding process vide letter dated May 25, 2018.



14. To evaluate the EPC cost claim of AWPPL, the Authority has considered the latest available EPC cost data in different parts of the world. The information given in the reports published by International Renewable Energy Agency ("IRENA"), Bloomberg and other sources has been relied upon for this purpose. Furthermore, the tariff determinations approved by the regulators of countries in different regions have also been studied. The costs allowed by the Authority in previously determined wind power projects were also examined. After analysing all this information, the Authority is of the view that EPC cost of USD 75.500 million as claimed by AWPPL is on the higher side. The process of selection of contractors followed by the petitioner may have been transparent; however, the same has not yielded prices which can be considered competitive and comparative. The considerations of the Authority for the assessment of the EPC costs to be allowed to the petitioner are given in the following paragraph.
15. It was noted that the average wind turbine prices across most of the countries were below USD 1 million per MW in 2017. The most updated reports provide that average global cost of wind turbines for the contracts signed in 1st Half of 2018 have fallen to around USD 0.85 million per MW. Beside turbine cost, the absolute amount and proportion of other components that constitute the total EPC cost as given in the referred reports was also analysed. EPC costs in China and India were also checked and found lowest in the world due to their local manufacturing, low cost of land and labour etc. For instance, there are states in India where the total EPC cost of even less than USD 0.80 million per MW has been allowed recently by their respective regulators. However, the Authority is of the view that the cases of any particular country cannot be made exact reference for Pakistan owing to differences in market conditions, local manufacturing bases, tariff regimes, performance targets and other technological and economic factors. The trend of decrease in EPC prices over last couple of years and reasons thereof were also examined. The competition among WTG suppliers has been reported as the primary factor for the decline in turbine prices and corresponding EPC cost of wind power projects. The variations in the cost of turbine having different hub heights, rotor diameters, nameplate capacity, origin of manufacturing were also analysed. The differences in the civil cost part of the project due to variations in the number and size of the turbines were also considered. The Authority further noted that margins for EPC contractor, transportation costs, level of performance being approved in this determination etc. should also be taken into account to set the EPC cost. After detailed analysis of the available information and factoring in all the aforesaid factors, the Authority has decided to approve the EPC cost of AWPPL as USD 57.039 million.



16. The allowed EPC cost is the maximum limit on overall basis. Applicable foreign portion of this cost, shall be allowed variations at Commercial Operations Date ("COD") due to change in PKR/USD parity during the allowed construction period, on production of authentic documentary evidence to the satisfaction of the Authority.

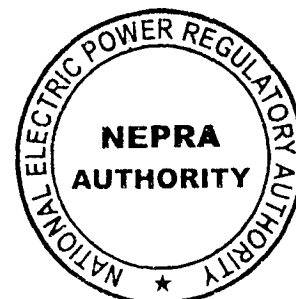
Whether the details provided for Non-EPC cost are sufficient and claimed Non-EPC cost is justified? Also provide justification for land requirement as claimed by the petitioner.

17. The petitioner has claimed USD 11.650 million on account of non-EPC cost. Detail of non-EPC cost as provided by the petitioner is hereunder:

Non-EPC Cost	(USD million)
Project Development cost	3.860
Insurance during construction	0.570
Financial charges	2.300
Interest during construction	4.920
Total Non-EPC Cost	11.650

Project Development Cost

18. The petitioner has claimed Project Development Cost ("PDC") of USD 3.860 million. In its petition and during the hearing, the petitioner submitted that this claim includes the cost of feasibility and other studies, security cost, land lease cost, administrative costs, fixed assets and office setup cost, various regulatory fees, travelling expenses, fees in relation to advisors of the project.
19. The petitioner submitted that the land lease for 462 acres has been signed with GOS on June 16, 2017. The petitioner has submitted the agreement of lease as per which it has already paid an amount of Rs. 13.86 million for the first 10 years lease.
20. The Authority has noted that PDC of around USD 3.5 million had been allowed in the earlier tariff cases of wind power projects. The Authority also referred the recent tariff cases of solar power projects of comparable size where the maximum PDC to the tune of USD 1.782 million has been allowed. Considering these details while accounting for the difference in construction period between solar and wind power projects, the Authority has decided to allow USD 2.5 million on account of PDC to the petitioner. This cost shall be adjusted at actual, up to the maximum allowed cost, based on production of verifiable documents at the time of COD.

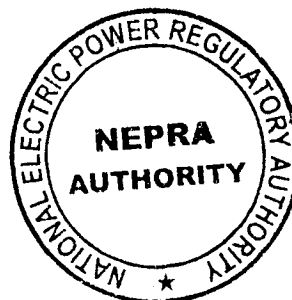


Insurance During Construction

21. The petitioner has claimed USD 0.570 million on account of insurance during construction cost. Following insurance coverage has been indicated by the petitioner during the construction period:
- a) Construction all risk insurances (CAR)
 - b) CAR delay in start-up insurance
 - c) Terrorism insurance
 - d) Marine and inland transit insurance
 - e) Marine – delay-in start-up insurance
 - f) Comprehensive general liability
22. The Authority has analysed the available data with respect to during construction insurance incurred by a number of wind power projects that have achieved COD. It has also been noted that in the recent tariff cases of solar power projects, the Authority has allowed pre-COD insurance at the maximum rate of 0.50% of the approved EPC cost. Based on these considerations, the Authority has decided to allow insurance during construction to the maximum of 0.5% of the approved EPC cost for the project as well which works out to be around USD 0.285 million. Insurance during construction shall be adjusted at actual, subject to allowed amount as maximum limit, at the time of COD on production of authentic documentary evidence to the satisfaction of the Authority.

Financial Fee & Charges

23. The petitioner has claimed USD 2.300 million on account of financial charges which includes fees and charges related to lenders up-front fee, lenders advisors & agents charges, commitment fee, management fee, charges related to various Letters of Credit ("LC") to be established in favour of various contracting parties, fees payable and stamp duty applicable on the financing documents, agency fee, security trustee fee, LC commitment fee/charges for EPC, commitment fee and other financing fees cost and charges. The petitioner submitted that keeping in view the deteriorating risk profile of the country and prevailing circular debt issue, higher financing cost is required to be incurred for obtaining financing for the project. During the hearing, the petitioner submitted that the claimed financial charges are based on term sheets received from IFC and ADB whose fee charges are usually higher than other lenders.



24. It was noted that in earlier tariff determinations for wind power projects, the Authority had allowed financial fee & charges at the rate of 3% of the debt portion of capital expenditures (EPC, PDC, pre-COD insurance). In recent cost plus tariff determinations of solar power projects, financial fee & charges at the rate of 2.5% of the debt portion of capital expenditures has been allowed. Considering the recent standards, the Authority has decided to approve financing fee and charges with the cap of 2.5% of the allowed debt portion of the approved capital cost to AWPPL. Accordingly, the allowed amount under this head works out to be around USD 1.196 million. Financing charges shall be adjusted at actual, subject to allowed amount as maximum limit, at the time of COD on production of authentic documentary evidences to the satisfaction of the Authority.

Interest During Construction (IDC)

25. The petitioner has claimed interest during construction of USD 4.92 million for 18 months construction period which has been calculated on the basis of 3 month KIBOR of 6% plus spread of 2.50% and 3 month LIBOR of 0.6% plus spread of 4.5%. The petitioner submitted that actual IDC, however, shall be subject to change depending on the fluctuations in base rate, funding requirement (drawdowns) of the project during the construction period, changes in project cost including changes due to taxes and duties, and variations in PKR / USD exchange rate. The loan repayment period of thirteen years has been claimed by the petitioner. The terms of financing as well as period for construction being approved in this determination are discussed in the ensuing relevant sections. Based on the approved financing terms, construction period, capital cost including financing fee and charges while considering notional drawdowns of 20% in each quarter, the IDC works out to be USD 1.932 million which is hereby approved.

26. Recapitulating the above, the approved project cost under various heads is given hereunder:

Project Cost	(USD million)
EPC Cost	57.039
Project Development Cost	2.500
Insurance during construction	0.285
Financing Fee & Charges	1.196
Interest During Construction	1.932
Total	62.952

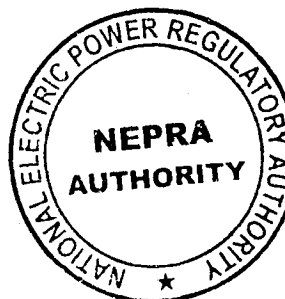


Whether the claimed annual energy generation and corresponding plant capacity factor are reasonable and justified? And Whether the petitioner's proposed wind turbine technology satisfies the international standards of quality and operation?

27. The petitioner submitted the following technical parameters in this regard:

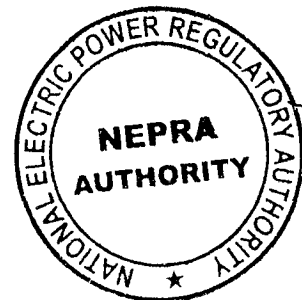
Project capacity	50 MW
Annual power generation	164,250 MWh
Net capacity factor	37.5%
Hub Height	90m
Rotor Diameter	121m
Name plate capacity (Each Turbine)	2.5 MW

28. The petitioner submitted that Annual Energy Production of 164.25 GWh has been estimated for the project based on Wind Resource and Energy Yield Assessment Report ("Energy Report") carried out by Technical Consultants and EPC Contractor. The petitioner submitted that the project has collected wind climate data from a Ground Measuring Station installed at the project site according to international standards. Further, the petitioner submitted that proven software and prudent techniques have been used in determining the energy potential.
29. The petitioner submitted that Goldwind is an international, multi-faceted wind power company based in China and has now expanded across six continents and is the largest WTG manufacturer with more than 44 Gigawatts of installed capacity and more than 28,000 installed WTG units worldwide. In addition, the petitioner submitted that the 2.5 MW platform selected for the project has more than 1698 installed units in the world. In Pakistan, Goldwind has already installed 180 MWs of turbines and have in construction 100 MWs and continues to lead the global wind industry with mature manufacturing capabilities and innovative product lines. The petitioner submitted that the selected WTG complies with the IEC standards and is in conformance with DNV GL standards for the certifications of wind turbines.
30. To assess this parameter of tariff, the Authority has analysed the data of energy yields of currently operational wind power plants in the country. The data of energy yields in different regions of the



world and their trend in last couple of years has also been reviewed. It has been noted that worldwide, the capacity factors have improved as new machines are yielding better energy output within a given wind resource regime. These improvements have also been noted while comparing the energy production of old and newly commissioned wind power projects in Jhimpir region. It is found that the primary reason of these better results has been the change in turbine design through improvement in hub height, nameplate capacity and especially the enhancement in rotor diameters. For AWPPL also, it has been found that the mentioned three parameters are better than the turbines installed by the earlier wind power projects which are under operation in the country. Keeping in view these considerations while comprehensively analysing the information submitted by the petitioner with respect to wind resource, location, technology etc. the Authority understands that the net annual plant capacity factor as claimed by the petitioner is quite on the lower side. The Authority is of the view that the yield numbers provided in the Energy Report at each probability level are quite conservative. As per the analysis of the Authority, it is considered that there exists adequate likelihood that the project can comfortably achieve yield better than given in the Energy Report even when compared with energy numbers at P50 level.

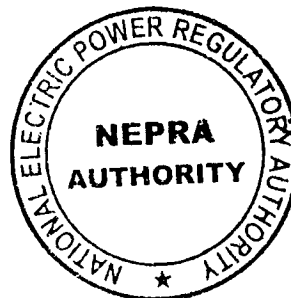
31. The Authority also noted the recent tariffs of three wind power projects were approved based on capacity factor results as assessed by the Authority. However, those project companies filed review motions primarily objecting the capacity factor approved in those determinations. In addition, the financiers such as Asian Development Bank and International Finance Corporation approached the Authority stating that it may not be viable for them to finance wind power projects on the basis as adopted by NEPRA to assess capacity factor. They requested the Authority that tariff of wind power projects should be set on a good probability level, preferably as given in their Energy Reports. They further submitted that the tariffs of wind power projects throughout the world are set on energy yield having higher possibility, mainly for financing purpose.
32. In view of these considerations and primarily to ensure the bankability of the project, the Authority has decided to set the tariff of AWPPL at net annual plant capacity factor of 38%. However, keeping in view the assessed potential of higher generation, the Authority has decided to approve the following sharing mechanism:



<u>Net annual plant capacity factor</u>	<u>% of prevalent tariff allowed to power producer</u>
Above 38% up to 40%	5%
Above 40% up to 42%	10%
Above 42% up to 44%	20%
Above 44% up to 46%	40%
Above 46% up to 48%	80%
Above 48%	100%

Whether the claimed O&M costs are justified? Provide rationale of claiming foreign & local O&M cost.

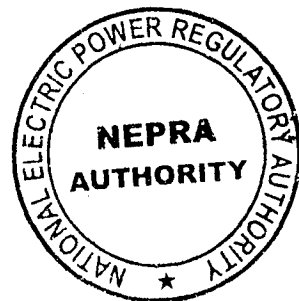
33. The petitioner has claimed O&M cost of USD 1.90 million per annum i.e. USD 38,000 per MW per annum. The petitioner has submitted the O&M contract for the initial 2 years (i.e. warranty period), that has been signed with Hydrochina International Engineering Company Ltd. on November 22, 2017. The petitioner submitted that claimed O&M cost caters for the cost of services rendered by the O&M operator. This also includes cost associated with local staff, administrative expenses, corporate fees, audit fees, advisory fees etc. The O&M cost has been claimed in the ratio of 39:61 for local and foreign costs respectively.
34. To evaluate the O&M cost claim of AWPPL, the Authority has considered the latest available O&M cost data in different parts of the world. The information given in the reports published by IRENA, Bloomberg and other sources have been relied upon. Furthermore, the tariff determinations approved by the regulators of countries in different regions have also been studied. The costs allowed by the Authority in previously determined wind power projects were also examined. Analysing all this data and particularly the trend of decrease in this cost component, the Authority is of the view that O&M cost of USD 1.9 million as claimed by AWPPL is not reasonable. The considerations made by the Authority for the assessment of the O&M costs to be allowed to the petitioner are given in the following paragraph.
35. The referred reports provide that the O&M cost has decreased sharply over the last couple of years and forecast further decrease in the upcoming years. The O&M cost of as low as USD 15,000 per MW per annum has been found in the referred sources for the initial term contracts. However, these sources qualify that O&M cost increases reasonably with turbines age as component failure becomes



more common and manufacturer warranties expire. It has also been found that wind power projects being setup with larger turbines and more sophisticated design will have relatively lower overall O&M cost. The reported impact of size of project and turbines on the annual cost of O&M and differentials with their varying sizes was also analysed. O&M cost in India and China have also been checked and found to be lowest across different countries. Particularly in India, the O&M cost has been found in range of USD 10,000 per MW to USD 14,000 per MW in different states. Nevertheless, the Authority is cognizant of the fact that the costs of India and China cannot be replicated in Pakistan due to advanced development stage of wind industry in those countries and consequent available expertise in terms of manpower and required equipment as well as due to difference in tariff regimes. In addition, the Authority also noted that the level of performance being approved in this determination is relatively higher as compared to what is allowed in India and China which shall require more robust warranties from the O&M contractor that shall also result in comparatively higher O&M cost. Considering all these factors, the Authority has decided to approve O&M cost of USD 23,000 per MW per annum for AWPPL. In view of the claim of the petitioner and other project companies, the Authority has decided to share the approved O&M cost into local and foreign components in the ratio of 50:50.

Whether the claimed insurance during operation cost is justified?

36. The petitioner has claimed USD 0.38 million per annum on account of insurance during operation. This is based on 0.5% of claimed EPC cost. The petitioner submitted that insurance cost consists of operations all risk insurance for the project, as well as business-interruption insurance; these are standard insurances required by all lenders' and also set out under the EPA. The petitioner submitted that since the Pakistan Insurance/Reinsurance industry does not have sufficient capacity and expertise to manage such huge risks entirely, therefore this risk is required to be insured/reinsured internationally. The risks to be covered through insurance will include machinery breakdown, natural calamities (like earthquake, floods, etc.), sabotage and consequential business interruption, etc.
37. The Authority has allowed insurance during operation at the rate of 0.4% of the EPC cost in the most recent determination of solar energy projects. The data of actual insurance of operational wind power projects has also been analysed for this purpose which shows that insurance during operation has been secured at the rate of even less than 0.4%. In view thereof, the Authority has decided to allow insurance during operation at maximum limit of 0.4% of the approved EPC cost to AWPPL. This



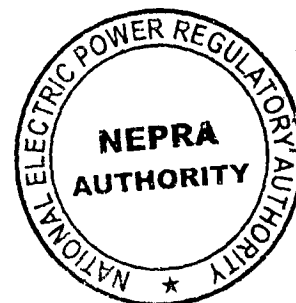
cost shall be allowed adjustment on annual basis as per the mechanism given in the order part of this determination.

Whether the claimed return on equity is justified?

38. The petitioner claimed return on equity (ROE) and return on equity during construction (ROEDC) of 15% (IRR basis) separately on invested equity net of withholding tax. The petitioner submitted that the withholding tax component has not been identified as a separate line item in the tariff as the same is assumed to be paid on all equity components i.e. ROE and ROEDC, at actual as a pass-through item under the tariff.
39. It was noted that over the passage of time, the Authority has revised the equity returns downward for a number of generation technologies keeping in view the developments in those sectors. The Authority has noted that nearly 1200 MWs of wind power projects have become operational. Further, it has been learnt that wind power projects having capacity of more than 2,000 MWs to be setup in Sindh have obtained LOIs from different facilitating agencies. This makes it quite clear that risk profile for developing wind projects especially in Sindh province has reduced considerably. Moreover, the Authority noted that a number of under process wind power companies have claimed ROE of even less than 14%. In view thereof, the Authority has decided to approve the ROE for the petitioner at the rate of 14%. Regarding the petitioner's claim of withholding tax on dividend, the Authority noted that it has principally decided not to allow this tax as pass through in any of the tariff cases.

Whether the claimed financing/debt terms are justified?

40. The petitioner has submitted that 50% foreign loan and 50% local loan shall be secured for the project based on debt to equity ratio of 75:25. The interest rate of LIBOR plus 4.5% and KIBOR plus 2.5% for foreign and local loans respectively has been claimed in the petition for the debt servicing period of thirteen years. AWPPL has submitted indicative term sheet signed with the lenders (IFC and Bank Al-Habib Limited) along with the petition.
41. The Authority has considered the terms of financing being claimed by the petitioner. The Authority has noted that the State Bank of Pakistan ("SBP") has issued concessionary financing scheme in June, 2016. Under the said scheme, renewable energy projects having capacity of up to 50 MW can secure loan up to the limit of Rs. 6 billion at the rate of 6% for the minimum debt servicing tenor of ten



years. The size of the project being setup by the petitioner is 50 MW which makes it eligible to avail financing under SBP scheme. The Authority has therefore decided to approve the reference tariff of AWPPL on the terms of financing scheme issued by SBP and hereby direct the petitioner to approach SBP for this purpose.

42. In case the petitioner is not able to secure financing under SBP scheme then the tariff of AWPPL shall be adjusted on conventional local/foreign financing, or a mix of both, at the time of its COD. However, the petitioner shall have to prove through documentary evidence issued by SBP/commercial bank that it exhausted the option of availing 100% financing under SBP scheme before availing part/full of conventional local/foreign loan. For conventional full/part of local loan, if any, the tariff of the petitioner shall be approved on applicable KIBOR plus spread of 2.25% and foreign loan on applicable LIBOR plus spread of 4.25%. For conventional loans, the term of debt servicing shall not be lesser than thirteen years.
43. The petitioner claimed tariff on debt: equity ratio of 75:25. The Authority has considered that a number of under process wind power projects have claimed their tariffs on debt: equity ratio of 80:20. Further, the Authority has considered that a number of benchmark/upfront tariff determinations of renewable power projects have been approved at the debt: equity ratio of 80:20. In view thereof, the Authority has decided to approve AWPPL's tariff on debt to equity proportion of 80:20. The approved debt: equity ratio shall remain same regardless of any form of financing secured by the petitioner.

Whether the claimed construction period is justified?

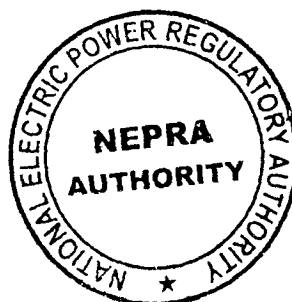
44. The petitioner has claimed eighteen month time for the construction of the project. The Authority has noted that there are a number of under process wind power projects which are claiming construction period of fifteen months. In addition, it has also been seen that there are a number of operational wind projects that have been able to complete construction in fifteen month time. In view thereof, the Authority has decided to approve the construction period of fifteen months for the petitioner as well.



Any Other Issue with the approval of the Authority?

Comments of CPPA-G

45. CPPA-G submitted that NEPRA should review the proposal in the context of demand vs supply situation coupled with the quantum of renewable energy to be inducted in Grid according to the recommendations of Grid Code Review Panel ("GCRP") duly approved by NEPRA from time to time. CPPA-G also submitted that all the projects based on wind, solar, small hydel and bagasse energy will be awarded through competitive bidding as per Cabinet Committee on Energy ("CCE") decision.
46. Regarding the submission of CPPA-G with respect to demand and supply position, it has been noted that NTDC vide its letter dated June 23, 2017 submitted tentative demand supply analysis with the report namely Power Balance up to 2025. In that document, NTDC submitted that it plans to evacuate 600 MW additional power from wind power projects in 2019-20 and further 500MW collectively from wind and solar power projects in 2020-21.
47. Regarding quantum of renewable energy induction in the Grid, the Authority has noted that as per approved Grid Code Addendum No. I (Revision-I) for Grid Integration of Wind Power Plants, the upper limit equal to 5% of the total installed grid-connected power capacity has been set for the integration of wind power plants. The Authority also noted that NTDC has issued certificate of approval of the system studies of the project company on Dec 01, 2016. NTDC in its approval letter also certified that the power to be generated by the project company will be evacuated by July, 2019 and will not have any adverse effect on the national grid as required under the Grid Code. On the basis of that approval, the Authority has issued generation license to AWPPL on Mar 28, 2017.
48. Regarding award of tariff of renewable energy projects through competitive bidding, it was noted that vide its decision dated January 27, 2017 in the matter of Wind Power Generation Tariff, the Authority decided to allow induction of wind energy through competitive bidding and directed the relevant agencies to develop RFP for that purpose. Due to non-finalization of RFP by any agency after the lapse of considerable time period, the process of competitive bidding has not taken place. Further, the Authority through decision dated May 30, 2017 passed in the Review Motion of GOS clarified that submission of tariff petitions under the Tariff Rules, 1998 is permissible. Therefore, it may not be considered appropriate to stop entertaining applications under Tariff Rules, 1998 merely on the basis of the decision of CCE.



49.

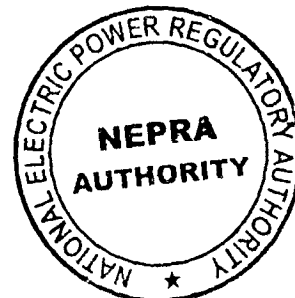
ORDER

In pursuance of section 7(3) (a) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 read with NEPRA (Tariff Standards & Procedure) Rules, 1998, the Authority hereby determines and approves the following generation tariff along with terms and conditions for Artistic Wind Power (Pvt) Limited for its 50 MW wind power project for delivery of electricity to the power purchaser:

Rs./kWh

Tariff Component	Year 1-10	Year 11-25
Operations and Maintenance Cost	0.8291	0.8291
Insurance during Operation	0.1645	0.1645
Return on Equity	1.3854	1.3854
Debt Servicing	4.8550	-
Total	7.2340	2.3790

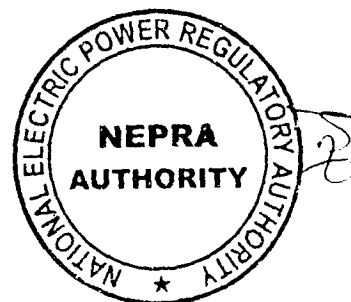
- Levelized tariff works out to be US Cents 4.7212/kWh.
- EPC cost of USD 57.039 million has been considered.
- PDC cost of USD 2.500 million has been taken into account.
- Insurance during construction at the rate of 0.5% of the EPC cost has been approved.
- Financing charges at the rate of 2.5% of the debt portion of the capital cost has been approved.
- ~~Net Annual Plant Capacity Factor of 38% has been approved~~
- O&M Cost of USD 23,000 per MW per year has been approved.
- Debt to Equity of 80:20 has been used.
- Debt Repayment period of 10 years has been taken into account.
- The cost of financing of 6% for construction and operation has been used.
- Return on Equity of 14% has been allowed.
- Construction period of fifteen (15) months has been used for the workings of ROEDC and IDC.
- Insurance during Operation has been calculated as 0.4% of the allowed EPC Cost.



- Reference Exchange Rates of 120 PKR/USD has been used.
- The aforementioned tariff is applicable for twenty five (25) years from COD
- Detailed component wise tariff is attached as **Annex-I** of this decision.
- Debt Servicing Schedule is attached as **Annex-II** of this decision.

A. One Time Adjustments at COD

- The EPC cost shall be adjusted at actual considering the approved amount as the maximum limit. Applicable foreign portion of the EPC cost will be adjusted at COD on account of variation in PKR/USD parity, on production of authentic documentary evidence to the satisfaction of the Authority. The adjustment in approved EPC cost shall be made only for the currency fluctuation against the reference parity values.
- The petitioner has submitted M/s DNV-GL certification No. TC-DNVGL-SE-0074-00766-0 dated August 16, 2016 about the design, specification and country of origin of various component of the wind turbine to be installed for this project. At the time of COD stage tariff adjustments, the petitioner will have to provide a confirmation from the EPC contractor as to the fullest compliance of the equipment having same design and origin of manufacture as given in the type certificate. Where needed, the bill of lading and other support documents will also have to be submitted.
- PDC, Insurance during construction and Financing Fee and Charges shall be adjusted at actual at the time of COD considering the approved amount as the maximum limit. The amounts allowed on these accounts in USD will be converted in PKR using the reference PKR/USD rate of 120 to calculate the maximum limit of the amount to be allowed at COD.
- Duties and/or taxes, not being of refundable nature, relating to the construction period directly imposed on the company up to COD will be allowed at actual upon production of verifiable documentary evidence to the satisfaction of the Authority.
- IDC will be recomputed at COD on the basis of actual timing of debt draw downs (for the overall debt allowed by the Authority at COD) for the project construction period of fifteen months allowed by the Authority.



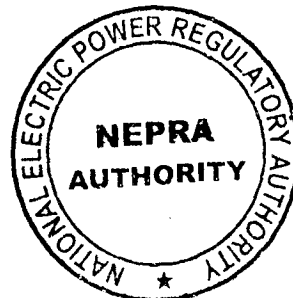
- For full/part of conventional local or foreign loans or a mix of both, if availed by the company, the IDC shall also be allowed adjustment for change in applicable KIBOR/LIBOR.
- The tariff has been determined on debt: equity ratio of 80:20. The tariff shall be adjusted on actual debt: equity mix at the time of COD, subject to equity share of not more than 20%. For equity share of more than 20%, allowed IRR shall be neutralized for the additional cost of debt: equity ratio.
- The reference tariff has been worked out on the basis of cost of 6% offered under SBP financing scheme. In case cost negotiated by the company under SBP scheme is less than the said limit of 6%, the savings in that cost shall be shared between the power purchaser and the power producer in the ratio of 60:40 respectively.
- For full or part of local or foreign loan, if any, the savings in the approved spreads shall be shared between the power purchaser and power producer in the ratio of 60:40.
- ROEDC will be adjusted at COD on the basis of actual equity injections (within the overall equity allowed by the Authority at COD) for the project construction period of fifteen months allowed by the Authority.

B. Indexations

Adjustment of O&M, return on equity, return on equity during construction shall be made on quarterly basis for the quarters starting from 1st July, 1st October, 1st January and 1st April based on latest available information. Adjustment of Debt Servicing Component (if any) shall be made either quarterly or bi-annually depending upon the final terms approved by the Authority. For bi-annual adjustments, the periods shall start from 1st July and 1st January. Insurance component shall be adjusted on annual basis starting from either 1st January or 1st July. The indexation mechanisms are given hereunder:

i) Operation and Maintenance Costs

O&M components of tariff shall be adjusted based on revised rates of local Inflation (CPI) as notified by Pakistan Bureau of Statistics, foreign inflation (US CPI) as notified by US Bureau of Labour Statistics and TT&OD selling rate of US Dollar as notified by National Bank of Pakistan according to the following formula;



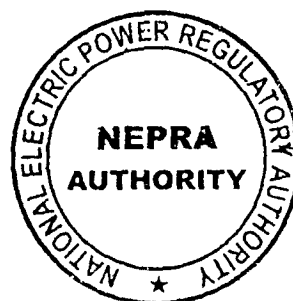
F. O&M _(REV)	=	F. O&M _(REF) * US CPI _(REV) / US CPI _(REF) * ER _(REV) /ER _(REF)
L. O&M _(REV)	=	L. O&M _(REF) * CPI _(REV) / CPI _(REF)
Where;		
F. O&M _(REV)	=	The revised O&M Foreign Component of Tariff
L. O&M _(REV)	=	The revised O&M Local Component of Tariff
F. O&M _(REF)	=	The reference O&M Foreign Component of Tariff
L. O&M _(REF)	=	The reference O&M Local Component of Tariff
US CPI _(REV)	=	The revised US CPI (All Urban Consumers)
US CPI _(REF)	=	The reference US CPI (All Urban Consumers) of 252.146 of August, 2018
CPI _(REV)	=	The revised CPI (General)
CPI _(REF)	=	The reference CPI (General) of 229.27 for the month of August, 2018
ER _(REV)	=	The revised TT & OD selling rate of US dollar
ER _(REF)	=	The reference TT & OD selling rate of RS. 120/USD

Note: The reference indexes shall be revised after making the required adjustments in tariff components at the time of COD.

ii) Insurance during Operation

The actual insurance cost for the minimum cover required under contractual obligations with the Power Purchaser, not exceeding 0.4% of the approved EPC cost, will be treated as pass through. Insurance component of reference tariff shall be adjusted annually as per actual upon production of authentic documentary evidence according to the following formula:

AIC	=	Ins _(Ref) / P _(Ref) * P _(Act)
Where;		
AIC	=	Adjusted insurance component of tariff
Ins _(Ref)	=	Reference insurance component of tariff
P _(Ref)	=	Reference premium @ 0.4% of approved EPC Cost at Rs. 120



$P_{(Act)}$	=	Actual premium or 0.4% of the approved EPC Cost converted into Pak Rupees on exchange rate prevailing at the time of insurance premium payment of the insurance coverage period whichever is lower
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iii) **Return on Equity**

The total ROE (ROE + ROEDC) component of the tariff will be adjusted on quarterly basis on account of change in USD/PKR parity. The variation relating to these components shall be worked out according to the following formula;

$ROE_{(Rev)}$	=	$ROE_{(Ref)} * ER_{(Rev)} / ER_{(Ref)}$
Where;		
$ROE_{(Rev)}$	=	Revised ROE Component of Tariff
$ROE_{(Ref)}$	=	Reference ROE Component of Tariff
$ER_{(Rev)}$	=	The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan
$ER_{(Ref)}$	=	The reference TT & OD selling rate of Rs. 120/USD

Note: The reference tariff component shall be revised after making the required adjustments at the time of COD.

iv) **Indexations applicable to debt**

For full or part of conventional foreign debt, if any, respective principle and interest components will be adjusted on quarterly/bi-annual basis, on account of revised TT & OD selling rate of US Dollar, as notified by the National Bank of Pakistan as at the last day of the preceding quarter, over the applicable reference exchange rate. The interest part of the foreign loan shall be allowed adjustment with respect to change in the applicable LIBOR. For full or part of conventional local loan, if any, the interest component shall be allowed adjustment with respect to change in applicable KIBOR.

C. Terms and Conditions

The following terms and conditions shall apply to the determined tariff:



- All plant and equipment shall be new and of acceptable standards. The verification of the plant and equipment will be done by the independent engineer at the time of the commissioning of the plant duly appointed by the power purchaser.
- This tariff will be limited to the extent of net annual energy generation supplied to the power purchaser up to 38% net annual plant capacity factor. Net annual energy generation supplied to the power purchaser in a year, in excess of 38% net annual plant capacity factor will be charged at the following tariffs:

<u>Net annual plant capacity factor</u>	<u>% of prevalent tariff allowed to power producer</u>
Above 38% up to 40%	5%
Above 40% up to 42%	10%
Above 42% up to 44%	20%
Above 44% up to 46%	40%
Above 46% up to 48%	80%
Above 48%	100%

- The petitioner is required to ensure that all the equipment is installed as per the details/specifications provided in the determination. Any change in the power curve of the turbines as provided in studies along with the petition and the relevant assumptions contained therein shall not be allowed.
- The petitioner is required to maintain the availability levels as declared in the Tariff Petition and the studies provided therein. Necessary clauses shall be included in the EPA so that the power producer cannot intentionally suppress the capacity factors. NPCC shall conduct detailed monitoring/audit of the operational record/log of all the wind turbines on quarterly basis to verify output/capacity of the power plant.
- The risk of wind resource shall be borne by the power producer.
- In the tabulated above tariff no adjustment for certified emission reductions has been accounted for. However, upon actual realization of carbon credits, the same shall be



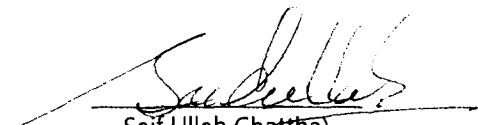
distributed between the power purchaser and the power producer in accordance with the applicable GOP Policy, amended from time to time.

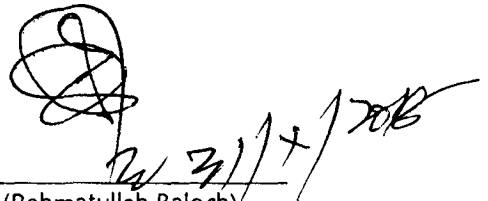
- The savings in the cost under SBP scheme during the loan tenor shall be shared between the power purchaser and power producer in the ratio of 60:40.
- In case the company shall secure full or part of local conventional loan then the tariff of company shall be adjusted at the time of COD at applicable KIBOR + spread of 2.25%. The savings in the approved spreads during the loan tenor shall be shared between the power purchaser and power producer in the ratio of 60:40. The tenor of the debt servicing shall not be less than thirteen years for this loan.
- In case the company shall secure full or part of foreign conventional loan then the tariff of company shall be adjusted at the time of COD at applicable LIBOR + spread of 4.25%. The savings in the approved spreads during the loan tenor shall be shared between the power purchaser and power producer in the ratio of 60:40. The tenor of the debt servicing shall not be less than thirteen years for this loan.
- In case the company shall secure foreign loan under any credit insurance (Sinasure etc.) then the cost of that insurance shall be allowed to the maximum limit of 0.6% of the yearly outstanding principal and interest amounts. For that purpose, the spread over that full/part of loan shall be considered as 3.5% as the maximum limit. The savings in the spread during the loan tenor shall be shared between the power purchaser and power producer in the ratio of 60:40.
- The company will have to achieve financial close within one year from the date of issuance of this determination. The tariff granted to the company will no longer remain applicable/valid, if financial close is not achieved by the company in the abovementioned timeline or its generation license is declined/revoked by NEPRA.
- The targeted maximum construction period after financial close is fifteen months. No adjustment will be allowed in this tariff to account for financial impact of any delay in project construction. However, the failure of the company to complete construction within fifteen months will not invalidate the tariff granted to it.

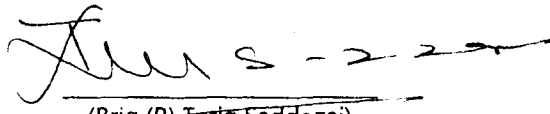


- Pre COD sale of electricity is allowed to the project company, subject to the terms and conditions of Energy Purchase Agreement, at the applicable tariff excluding principal repayment of debt component and interest component. However, pre COD sale will not alter the required commercial operations date stipulated by the Energy Purchase Agreement in any manner.
 - In case the company is obligated to pay any tax on its income from generation of electricity, or any duties and/or taxes, not being of refundable nature, are imposed on the company, the exact amount paid by the company on these accounts shall be reimbursed on production of original receipts. This payment shall be considered as a pass-through payment. However, withholding tax on dividend shall not be a pass through item.
 - No provision for the payment of Workers Welfare Fund and Workers Profit Participation has been made in the tariff. In case, the company has to pay any such fund, that will be treated as pass through item in the EPA.
 - The approved tariff along with terms & conditions shall be made part of the EPA. General assumptions, which are not covered in this determination, may be dealt with as per the standard terms of the EPA.
50. The Order part along with two Annexures is recommended for notification by the Federal Government in the official gazette in accordance with Section 31(7) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

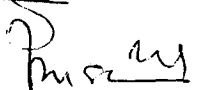
AUTHORITY


Saif Ullah Chattha
Member 31.10.2018


(Rehmatullah Baloch)
Vice Chairman

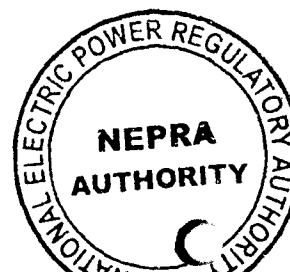

(Brig (R) Tariq Saddozai)
Chairman




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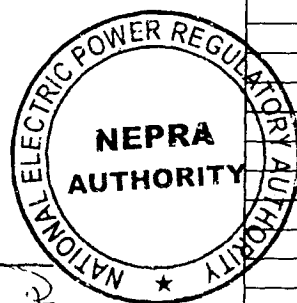
**ARTISTIC WIND POWER (PVT.) LIMITED
REFERENCE TARIFF TABLE**

Year	Foreign O&M	Local O&M	Insurance	Return on Equity	ROEDC	Loan Repayment	Interest Charges	Tariff
	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh
1	0.4146	0.4146	0.1645	1.2708	0.1145	2.7372	2.1178	7.2340
2	0.4146	0.4146	0.1645	1.2708	0.1145	2.9051	1.9498	7.2340
3	0.4146	0.4146	0.1645	1.2708	0.1145	3.0834	1.7715	7.2340
4	0.4146	0.4146	0.1645	1.2708	0.1145	3.2726	1.5823	7.2340
5	0.4146	0.4146	0.1645	1.2708	0.1145	3.4734	1.3815	7.2340
6	0.4146	0.4146	0.1645	1.2708	0.1145	3.6866	1.1684	7.2340
7	0.4146	0.4146	0.1645	1.2708	0.1145	3.9128	0.9422	7.2340
8	0.4146	0.4146	0.1645	1.2708	0.1145	4.1529	0.7021	7.2340
9	0.4146	0.4146	0.1645	1.2708	0.1145	4.4077	0.4472	7.2340
10	0.4146	0.4146	0.1645	1.2708	0.1145	4.6782	0.1767	7.2340
11	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
12	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
13	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
14	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
15	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
16	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
17	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
18	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
19	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
20	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
21	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
22	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
23	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
24	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
25	0.4146	0.4146	0.1645	1.2708	0.1145	-	-	2.3790
Levelized Tariff	0.4146	0.4146	0.1645	1.2708	0.1145	2.3463	0.9402	5.6655



ARTISTIC WIND POWER (PVT.) LIMITED
DEBT SERVICING SCHEDULE

Relevant Quarters	Base amount (USD)	Principal Repayment (USD)	Interest (USD)	Balance Principal (USD)	Total Debt Service (Million USD)	Annual Principal Repayment Rs./kWh	Annual Interest Rs./kWh
1	50,361,967	928,025	755,429	49,433,941	1,683,455	2.7372	2.1178
2	49,433,941	941,945	741,509	48,491,996	1,683,455		
3	48,491,996	956,075	727,380	47,535,921	1,683,455		
4	47,535,921	970,416	713,039	46,565,506	1,683,455		
5	46,565,506	984,972	698,483	45,580,534	1,683,455	2.9051	1.9498
6	45,580,534	999,747	683,708	44,580,787	1,683,455		
7	44,580,787	1,014,743	668,712	43,566,044	1,683,455		
8	43,566,044	1,029,964	653,491	42,536,080	1,683,455		
9	42,536,080	1,045,413	638,041	41,490,667	1,683,455	3.0834	1.7715
10	41,490,667	1,061,095	622,360	40,429,572	1,683,455		
11	40,429,572	1,077,011	606,444	39,352,561	1,683,455		
12	39,352,561	1,093,166	590,288	38,259,395	1,683,455		
13	38,259,395	1,109,564	573,891	37,149,832	1,683,455	3.2726	1.5823
14	37,149,832	1,126,207	557,247	36,023,625	1,683,455		
15	36,023,625	1,143,100	540,354	34,880,524	1,683,455		
16	34,880,524	1,160,247	523,208	33,720,278	1,683,455		
17	33,720,278	1,177,650	505,804	32,542,627	1,683,455	3.4734	1.3815
18	32,542,627	1,195,315	488,139	31,347,312	1,683,455		
19	31,347,312	1,213,245	470,210	30,134,067	1,683,455		
20	30,134,067	1,231,444	452,011	28,902,624	1,683,455		
21	28,902,624	1,249,915	433,539	27,652,708	1,683,455	3.6866	1.1684
22	27,652,708	1,268,664	414,791	26,384,044	1,683,455		
23	26,384,044	1,287,694	395,761	25,096,350	1,683,455		
24	25,096,350	1,307,009	376,445	23,789,341	1,683,455		
25	23,789,341	1,326,614	356,840	22,462,727	1,683,455	3.9128	0.9422
26	22,462,727	1,346,514	336,941	21,116,213	1,683,455		
27	21,116,213	1,366,711	316,743	19,749,502	1,683,455		
28	19,749,502	1,387,212	296,243	18,362,290	1,683,455		
29	18,362,290	1,408,020	275,434	16,954,269	1,683,455	4.1529	0.7021
30	16,954,269	1,429,141	254,314	15,525,129	1,683,455		
31	15,525,129	1,450,578	232,877	14,074,551	1,683,455		
32	14,074,551	1,472,336	211,118	12,602,215	1,683,455		
33	12,602,215	1,494,421	189,033	11,107,793	1,683,455	4.4077	0.4472
34	11,107,793	1,516,838	166,617	9,590,956	1,683,455		
35	9,590,956	1,539,590	143,864	8,051,366	1,683,455		
36	8,051,366	1,562,684	120,770	6,488,681	1,683,455		
37	6,488,681	1,586,124	97,330	4,902,557	1,683,455	4.6782	0.1767
38	4,902,557	1,609,916	73,538	3,292,641	1,683,455		
39	3,292,641	1,634,065	49,390	1,658,576	1,683,455		
40	1,658,576	1,658,576	24,879	(0)	1,683,455		



ANNEXURE-D3
SCHEDULE-II TO THE GENERATION LICENSE



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



SCHEDULE-II

(1).	Total Installed Gross ISO Capacity of the Generation Facility /Wind Farm (MW/GWh)	50 MW
(2).	Total Annual Full Load Hours	3066.0 Hrs
(3).	Average Wind Turbine Generator (WTG) Availability	98.0 %
(4).	Total Gross Generation of the Generation Facility/Wind Farm (in GWh)	186.88 GWh
(5).	Array & Miscellaneous Losses GWh	13.62 GWh
(6).	Availability Losses GWh	3.41 GWh
(7).	Balance of Plant Losses GWh	3.41 GWh
(8).	Annual Energy Generation (25 year equivalent Net AEP) GWh	166.44GWh
(9).	Net Capacity Factor	38.00 %

Note

All the above figures are indicative as provided by the Licensee. The Net energy available to NTDC for dispatch will be determined through procedures contained in the Energy Purchase Agreement.

