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December 12, 2017

Registrar
National Electric Power Regulatory Authority
NEPRA Tower Attaturk Avenue (East),
Sector G-5/1, Islamabad.

Subject: Tariff Petition of ACT2 WIND (PRIVATE) LIMITED 50 MW Wind Power Project

Kindly accept the Company's Tariff Petition, along with the fee as determined by the National Electric Power Regulatory Authority ("NEPRA" or the Authority-) for kind consideration and favorable approval by the Authority in accordance, inter alia, with section-31 of the Regulation of Generation. Transmission and Distribution of Electric Power Act, 1997 read with Rule 3 of the NEPRA tariff Standards and Procedure Rules, 1998 and other applicable provisions of NEPRA law.

The Tariff Petition (including its Annexures) is submitted in triplicate together with:

a. Board Resolution of Act2 Wind (Private) Limited.
b. Affidavits of Act2 Wind (Private) Limited.

Yours sincerely,

Act2 Wind (Private) Limited

BEFORE

THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

TARIFF PETITION

PURSUANT TO NEPRA (TARIFF STANDARDS AND PROCEDURE) RULES, 1998
READ WITH THE PROVISIONS OF
THE REGULATION FOR GENERATION, TRANSMISSION AND DISTRIBUTION OF ELECTRIC POWER ACT (XL OF) 1997 & THE RULES AND REGULATIONS MADE THEREUNDER

ON BEHALF OF

ACT2 WIND POWER (PRIVATE) LIMITED

FOR NEPRA'S APPROVAL OF REFERENCE GENERATION TARIFF
FOR ACT2 WIND (PRIVATE) LIMITED

FOR A WIND POWER PROJECT OF [50] MW
AT: JHIMPIR, PROVINCE OF SINDH, PAKISTAN

DATED: 13 December, 2017

ACT2 WIND (PRIVATE) LIMITED

ADDRESS	:	**1002, EMERALD TOWERS, DO TALWAR, CLIFTON, KARACHI, PAKISTAN.**
PHONE #	:	**+92-21-35147573-74**
FAX #	:	**+92-21-32416816**

1. DETAILS OF THE PETITIONER

NAME AND ADDRESS

ACT2 Wind (Private) Limited

ADDRESS	:	1002, EMERALD TOWERS, DO TALWAR, CLIFTON, KARACHI, PAKISTAN.
PHONE #	:	+92-21-35147573-74
FAX #	:	+92-21-32416816

REPRESENTATIVES OF M/S ACT2 WIND (PRIVATE) LIMITED

Mr. Mustafa Tapal
Director
ACT2 Wind (Private) Limited
Authorized Representative, ACT2 Wind (Private) Limited
Email: mustafa.tapal@avs.com.pk

2. REGULATORY FRAMEWORK LEADING TO TARIFF PETITION

2.1 NATIONAL ELECTRIC POWER REGULATORY AUTHORITY – THE COMPETENT AUTHORITY FOR DETERMINATION OF TARIFF

2.1.1 NEPRA Act, NEPRA Rules:

In terms of the Policy for Development of Renewable Energy for Power Generation 2006 (the **Policy**), the Alternative Energy Development Board (the **AEDB**) has confirmed its intent for ACT2 Wind (Private) Limited (**Project Company**) to establish an approximately 50 MW wind power generation project (the **Project**) in the Jhimpir region in the province of Sindh pursuant to a letter of intent dated October 20th, 2015 (the **LOI**), extended pursuant to Letter by Government of Sindh (GoS) dated May 8th, 2017, further extended pursuant to Letter by GoS dated December 12th, 2017 The LOI is currently valid up to June 12th, 2018..

Under the Regulation for Generation, Transmission and Distribution of Electric Power Act (XL of) 1997 (the **NEPRA Act**), the National Electric Power Regulatory Authority (**NEPRA**) is responsible, *inter alia*, for determining tariffs and other terms and conditions for the supply of electricity through generation, transmission and distribution. NEPRA is also responsible for determining the process and procedures for reviewing tariffs and recommending tariff adjustments. Further, pursuant to the enabling provisions of the NEPRA Act, the procedure for tariff determination has been prescribed in the NEPRA (Tariff Standards and Procedure) Rules, 1998 (the **NEPRA Rules**).

2.2 PROCESS LEADING TO TARIFF PETITION

2.2.1 Submission of the Feasibility Study and approval of the same:

In compliance with the requirements laid out in the Policy and the LOI, the Project Company completed the detailed feasibility in respect of the Project (the **Project Feasibility Study**) and submitted the same to Panel of Experts (the **Experts**) of GoS for their review and approval.

Following completion of the detailed review of the Project Feasibility Study by the Experts, the Experts vide their letter # DAE/GEN/119/2016 dated 3rd November 2017, granted approval of the Project Feasibility Study submitted by the Project Company.

2.2.2 Request for Determination of Tariff:

Since the Project Company:

(a) has been granted the LOI by the GoS (attached as **Annex-A**),

(b) has leased land for the Project by the GoS (see Agreement to Lease between the Project Company and the AEDB attached as **Annex-B**),

(c) has received approval in respect of the Grid Interconnection Study for the Project

by the National Transmission and Despatch Company (**NTDC**) (attached as **Annex**-C),

(d) has received approval in respect of the Project Feasibility Study by the Experts (attached as **Annex-D**),

(e) has obtained the applicable environmental approvals in respect of the Project from the Sindh Environment Protection Agency (attached as **Annex-E**),

(f) has executed binding contracts in respect of engineering procurement and construction (**EPC**) works for the Project with renowned EPC contractors (attached as **Annex-F**),

(h) has obtained term sheets for debt financing required for the Project (details attached as **Annex-G**),

accordingly, it is submitted that the requirements of the regulatory process for applying to NEPRA for a cost-plus tariff determination for the Project have been completed.

2.3 SUBMISSION

Pursuant to the relevant provisions of the NEPRA Rules, read with the provisions of the NEPRA Act and the rules and regulations made there under, in accordance with the Policy; **AND** in view of compliance by the Project Company of the foregoing (including the LOI), **ACT2 Wind (Private) Limited submits here with** before NEPRA, the competent regulatory authority lawfully authorized to determine tariff for wind power generation companies, for its approval, a tariff petition (the **Tariff Petition**) for approval of:

(i) the reference generation tariff (the **Reference Generation Tariff**);
(ii) the Indexations and Adjustments;
(iii) Adjustments at commercial operations date; and
(iv) other matters set out in this Tariff Petition,

Given the advanced stage of the Project, NEPRA is kindly requested to process the Tariff Petition at the earliest, thereby enabling the Project Company to achieve financial close and start generation by first quarter 2020 as per the requirements of the LOI.

3. EXECUTIVE SUMMARY

3.1 PROJECT SUMMARY

ACT2 WIND is a 50MW wind project being developed by Akhtar Group (AG), Ismail Group (IG) and Tapal Group (TG) (collectively referred to as the **Sponsors**). *The Sponsors already own and operate a 30MW wind farm in Jhimpir which achieved commercial operation in October 2016.* Details of the three groups are as follows:

Akhtar Group

Akhtar Group is part of Pakistan's oldest business groups comprising of 5 operating companies dealing in various business segments, which include paper cones, textile machinery, textile garments, sugar mill equipment, auto / steel industry marketing, denim production, jeans production, polo shirts, dairy farming, dairy processing, boilers, turbines, biomass power plants, wind power and so on. A brief on the various business interests of the Group is provided below.

i. Akhtar & Sons:

Akhtar & Sons is one of the leading indenting companies in Pakistan. The company initially provided a complete range of services towards the designing and commissioning of spinning, dyeing and finishing plants. With time, it has progressed into other fields including coal fired and biomass power plants, sugar machinery, overhead cranes and various grades of stainless steel. Today, Akhtar & Sons has achieved sales of more than 9 million spindles in textiles and almost 50 turnkey projects making them the largest textile indenter in the country.

ii. Akhtar Textile Industries (Pvt) Ltd.

Akhtar Textile Industries was established in 1985 and is known for manufacturing and exporting textile products to many parts of the world. It started with a production capacity of 5,000 pieces per day, which has now increased to more than 30,000 pieces per day.

iii. Indigo Textile (Pvt) Ltd.

Indigo Textile is one of the leading fabric and denim suppliers. Besides catering to the local Pakistani market, it exports denim to countries all over the world. Current production capacity of the company stands at 20 million meters per year.

iv. Dairyland (Pvt.) Ltd.

Dairyland was incorporated in 2009 with the sole purpose of bringing the best quality milk within the reach of the common man at an affordable price. It established its own state of the art dairy farms in Sindh with an initial start-up of 500 cows, which has now reached to 1,400 cows. The plant is first of its kind in Pakistan with totally mechanized manure collecting system, automatic milk collection and lane flushing valves for cow hygiene. Dairyland also has a modern pasteurizing plant imported from Germany with a capacity of processing 5,000 l/h of raw milk into a package product of 0.5 and 1.0 litre SKUs.

Ismail Group (Candyland)

Ismail Group is a leading and highly respected business group of Pakistan. The group is professionally managed and has developed an enviable track record in the fast growing retail markets of Pakistan and abroad. Its flagship company, Ismail Industries Limited, for example, has indigenously developed the largest confectionary brand in Pakistan and is the largest exporter of confectionary.

i. Ismail Industries Limited

Ismail Industries Limited was incorporated as a public limited company in accordance with Companies Ordinance, 1984 in the year 1989. The company initially manufactured and sold high quality confectionery products under the brand name of **CANDYLAND.** Today Candyland is the largest confectionery brand in Pakistan. In 2002, Ismail Industries Limited acquired a biscuit company from IBL, which was a licensee of Meiji Biscuits, Japan and launched a biscuit brand under the name of **BISCONNI**. In 2004, Ismail Industries Limited pursued a strategy of vertical integration and portfolio diversification with the establishment of **ASTRO PACK**, a unit for manufacturing of Cast Polypropylene Films along with metallization. In 2006, the company invested in potato chips and snack foods by establishing a snack food division, under the name **SNACK CITY.** Some of the associated companies of Ismail Industries include:

ii. The Bank of Khyber:

The Bank of Khyber (BOK) was established in 1991 in pursuance of the Bank of Khyber Act, 1991 (as amended from time to time) and it was given the status of a scheduled bank in September 1994. The shares of BOK are listed on Karachi Stock Exchange. BOK is a professionally managed bank with a successful track record of over 20 years of operations.

Ismail Industries Limited presently holds 8.61% voting and equity interest in BOK and has representation on the Board of Directors of BOK.

iii. Novelty Enterprises (Pvt) Ltd.

Novelty Enterprises (NEL) was incorporated on July 26, 2006, in accordance with provisions of the Companies Ordinance, 1984 as a private limited company. The principal business of the NEL is to carry out purchase, lease, transfer, and exchange of real estate. Ismail Industries Limited holds 33% voting and equity interest in NEL and has representation on the Board of Directors.

iv. Ismail Iqbal Commodities (Pvt) Ltd.

Ismail Iqbal Commodities (IIC) was incorporated on March 14, 2008, in accordance with provisions of the Companies Ordinance, 1984 as a private limited company and is a Corporate Member of Pakistan Mercantile Exchange Limited (formerly National Commodity Exchange Limited). IIC is engaged in the dealership and brokerage of gold, silver and other precious metals, stones and commodities.

Tapal Group

Tapal Group is one of Pakistan's leading business groups with a diversified portfolio of businesses and investments. The group has been in existence since 1867. Since then, the group has entered into several successful business ventures.

In the energy sector, Tapal Group has been associated with the sector for over 45 years. During the 50s and 60s Pakistan's industrial sector witnessed intense activity. In this period, KESC and WAPDA enhanced their electricity generation and transmission capabilities; Brown Boveri Co., in collaboration with Tapal Group, was one of the first few foreign power companies to supply equipment and backup services.

The group also owns and operates Tapal Energy (Pvt.) Ltd. (**TEL**), a thermal power project with an installed capacity of 126 MW; the total output of the plant is purchased by the Karachi Electric Supply Company. The project entered construction stage in the 3rd quarter of 1995 and was completed at a fast track, within 14 months to start operation in 1997.

In the wind power sector, the group setup Green Power (Private) Limited (now known as Foundation Wind Energy II Limited, **FWE-II**) in 2006, marked as one of the pioneers in the local wind sector. The project subsequently moved on to achieve financial close through a collaborative effort between Tapal Group and Fauji Foundation Group (equity partners of Tapal Group in FWE-II).

Sponsors' Power Sector Experience

Apart from Act-II, which is the Sponsors' second Wind Power Project in Pakistan, the same Sponsors are currently involved in the operations / development of the following major power projects across Pakistan:

1. **Tapal Energy (Private) Limited**

   Tapal Energy (Private) Limited is a 126 MW RFO based thermal power plant in Karachi set up by Tapal Group. The project was a joint venture with Wartsila (Finland) and Marubeni (Japan), and became the first IPP project (a 126-MW diesel power plant) to commence operations under the 1995 Pakistan Private Policy.

2. **Foundation Wind Energy II (Private) Limited**

   Foundation Wind Energy II (Private) Limited is a 50 MW wind power project set up by Tapal Group in collaboration with Fauji Foundation Group. The lending for the project is arranged from Asian Development Bank and Islamic Development Banks as the Lead Foreign Lenders while National Bank of Pakistan is the Lead Local Lender. Tapal Group holds 20% equity stake in FWE-II, which successfully achieved COD in December 2014.

3. **Tapal Wind Energy (Private) Limited** ***(ACT Wind (Private) Limited)***

   Tapal Wind Energy (Private) Limited is a 30 MW wind power project currently being set up in Jhimpir, Sindh. The project achieved its financial close on 27th March, 2015 and is currently in its construction phase. The Project is expected to achieve Commercial Operations Date in June

2016. Shareholding in TWEPL is split equally between Ismail Industries, Akhtar Group and Tapal Group as is the case in ACT2 Wind (Private) Limited. The project is 100% locally financed.

The Sponsors' combined experience makes them uniquely poised to undertake this project with sufficient technical and financial strength. The Project Company has both competent in-house financial, technical and legal teams as well as external legal, financial and technical consultants assisting on the Project.

The Project Company has leased 320 acres of land in Jhimpir, District Thatta for the purposes of setting up a 50MW Wind Power Project. An Agreement for Lease was signed between the Project Company and Government of Sindh, Land Utilization Department on 7th June 2017 for a period of thirty years. The Project consists of 20 Goldwind 2.5MW turbines with a rotor diameter of 121m. The generation voltage is 690V and will be stepped up to a medium voltage. The medium voltage will then be stepped up to 132kV through a 132kV substation located at the plant site. The plant will interconnect with the Power Purchaser at 132kV. As per the Renewable Energy Policy, all energy generated from the plant will be purchased by the Power Purchaser, in accordance with the approved Grid Interconnection Study and Energy Purchase Agreement.

EPC APPROACH & ARRANGEMENT:

WTG Technology & EPC Selection

After award of LOI, the Project Company carried out a competitive bidding process in order to select an EPC and WTG manufacturers for the Project. An RFP was circulated on 15th March 2016 and all contractors meeting a certain criteria were invited to bid. Bids were received from the following bidders:

a) Vestas Denmark
b) CSIC China
c) HydroChina Corporation
d) Nordex Germany
e) Descon Pakistan
f) SANY China

Bid clarification meetings were held with the bidders and last date for submission of bids was 14th April 2016, which was later extended till 24th April 2016.

A 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 who successfully passed the technical evaluation were then evaluated on the basis of financial bids.

Bidders were asked to provide the following information which was then used for tender evaluation:

a) Experience of the Bidder;
b) Capability of the Bidder
c) Compliance with the Tender Documents;

d) Commerical Terms;
e) Risk coverage: liquidated damages, availability guarantee, bank guarantee, total liability, etc;
f) Time for Construction
g) Technical Parameters
h) Quality of offered equipment and reputation of proposed vendors
i) Health, Safety and Environmental imapct
j) Operations and Maintenance regime.

After indepth review and analysis, HydroChina Corporation with Goldwind WTGs was declared as the first preferred bidder.

The Company had completed all requirements for the then available upfront tariff, but despite best efforts of the Company, grant of upfront tariff could not be achieved.

After lapse of the Upfront Tariff, NEPRA issued a Benchmark Tariff for reverse bidding in January 2017. Unfortunately no Wind RFP has been issued by the relevant agencies to date. Based on the decision of the Authority on Motion for Leave for Review of EDGOS, the Company decided to opt for Cost Plus Tariff regime and re-negotiated the EPC terms with the earlier selected EPC contractor.

Accordingly, based on due diligence and following a negotiations process with the preferred bidder, the Company signed an EPC contract with **"Hydrochina Corporation"** and **"Goldwind WTG GW 121-2.5"** as the technology for its Project with a fixed price and fixed Commercial Operations Date.

Goldwind – The WTG Manufacturer

Goldwind is an international, multi-faceted wind power company based in Beijing, China and has now expanded across six continents.

With strong international research and development capabilities and an extensive experience of more than 27 years in wind farm development, Goldwind has become a global leader in manufacturing wind turbine generators (WTGs) and providing comprehensive wind power solutions. Goldwind's current product portfolio includes turbines with rated capacities of 1.5 MW to 2.5 MW. Additionally, Goldwind offers support services that cover everything from development assistance to operations and maintenance

Goldwind is the largest WTG manufacturer with more than 31 Gigawatts of installed capacity and more than 22,000 installed WTG units worldwide. The 2.5 MW platform selected for the project has more than 1698 installed units in the world. In Pakistan they have already installed 230 MWs of Turbines and have in construction an additional 100 MWs.

Goldwind continues to lead the global wind industry with mature manufacturing capabilities and innovative product lines.

The specifications of 2.5 MW GW 121 -2.5 turbine are as follows:

1	Wind Turbine Type, Make & Model	GW 121-2.5
2	Installed Capacity of Wind Farm (MW)	50 MW

3	Number of Wind Turbine Units/Size of each Unit (KW)	20 x 2.5 MW
4	Number of blades	3
5	Rotor diameter	121m
6	Hub Height	90m
7	Generator Voltage	690 V
8	Cut-in wind speed	2.8 m/s
9	Cut-out wind speed	22 m/s
10	Rated wind speed	9.3 m/s

The EPC Contractor - HydroChina Corporation

HYDROCHINA CORPORATION, is part of Power China group, one of the largest groups in China with total revenue of approx. US$ 50 billion and total assets of over US$ 77 billion. Power China perform more than 1900 Projects in 116 countries.

The company provides technical services in the field of hydropower, water resources development and wind power development in China, including planning of river basins, reconnaissance, design, consultancy, construction supervision, appraisal, evaluation, safety appraisal, check and acceptance, construction, project management and EPC contracting for hydropower and new energy development, and development, investment, operation and management of hydropower and new energy projects as well. The company was founded in 2002 and is headquartered in Beijing, China.

In Pakistan Hydrochina Corporation has been conducting EPC works since 2011 and has completed EPC contracts for 280 MWs and is executing EPC contracts for another 300 MWs.

O&M ARRANGEMENT:

1.1. The Company has entered into a warranty period Operations and Maintenance contract with Hydrochina International Engineering Company for operation of the plant. The contracts also includes maintenance repair and replacement of all parts to ensure efficient and safe operations of the plant. Under the O&M Agreement, the Contractor has guaranteed the performance of the wind farm for the contracted period, thus minimizing the technical operational risk of the Project.

PROJECT FUNDING:

The capital structure of the Project is envisaged at 75:25 (Debt : Equity). The Project Company intends to obtain 50% of the debt from DEG and 50% from Bank AlHabib. The Project Company has already finalized detailed term sheets with such banks for purposes of financing of the Project. The signed term sheets for the financing of the Project are attached as ***Annexure G***.

The equity required for the Project will be injected by the Sponsors from their own sources.

3.2 SALIENT FEATURES OF THE PROJECT

Subject to the assumptions contained in this Tariff Petition, please find below a summary of the Project for NEPRA's perusal:

PROJECT COMPANY	ACT2 Wind (Private) Limited		
SPONSORS	Akhtar Group, Ismail Group (Candyland) and Tapal Group with equal shareholding		
PROJECT CAPACITY	50 MW		
PROJECT LOCATION	Jhimpir, Province of Sindh, Pakistan		
LAND AREA	320 Acres		
CONCESSION PERIOD	25 years from commercial operations date		
PURCHASER	Central Power Purchasing Agency (Guarantee) Limited		
ENERGY PRODUCTION	162,498		
EPC CONTRACTOR	HYDROCHINA INTERNATIONAL ENGINEERING COMPANY LIMITED -- Onshore Power Construction Coperation of China Ltd.- Offshore		
PROJECT CAPITAL COST			***Amount (US$ '000)***
	EPC Price		75,000
	Non-EPC Cost & Project Development Cost		3,510,500
	Insurance During Construction		500,000
	Financial Charges		1,777,736
	Interest During Construction		4,115,921
	Total Project Cost		**84,904,157**
FUNDING PLAN	Debt 75% : Equity 25%		
EQUITY	US$ 21.23 million		
LONG TERM DEBT	US$ 63.68 million		
LENDERS	• DEG - DEUTSCHE INVESTITIONS- UND ENTWICKLUNGSGESELLSCHAFT mbH • Bank Al-Habib		
TERMS OF LONG-TERM DEBT (LCY)	**Currency**	Pakistani Rupees	
	Terms	Up to 14.5 years	
	Grace Period	18 months	
	Repayment Period	13 years	
	Debt Repayment	in equal quarterly instalments	
	Interest Rate	Base Rate: 3 Months KIBOR Spread: 250 basis points	
TERMS OF LONG-TERM DEBT (FCY)	**Currency**	United States Dollars	
	Terms	Up to 15 years	
	Grace Period	24 months	
	Repayment Period	13 years	
	Debt Repayment	in equal quarterly instalments	
	Interest Rate	Base Rate: 3 Months LIBOR Spread: 450 basis points	
O&M CONTRACTOR	Hydrochina International Engineering Company Limited		
PROJECT OPERATION COST			***Amount (US$ '000)***
	Years	*1-13*	*14-25*
	O&M Cost	1,900	1,900
	Insurance Cost	375	375
	Total Operating Cost	**2,275**	**2,275**
LEVELIZED TARIFF	7.1924 US cents/Kwh		

CONCESSION DOCUMENTS	Energy Purchase Agreement Implementation Agreement Government of Pakistan Guarantee Site Sub-Lease Deed
APPLICABLE POLICY	Policy for Development of Renewable Energy for Power Generation, 2006
TECHNICAL ADVISORS	Renewable Resources (Private) Limited
FINANCIAL ADVISORS	Bridge Factor (Pvt.) Limited
LEGAL ADVISORS	HaidermotaBNR & Co.
MILESTONES ACHIEVED BY THE PROJECT	• Letter of Intent • Land Lease Signed • Land Allotted • Wind Mast Installed • Topographical Study • Transportation Study • Geo-technical Study • Wind Resource Assessment Study • Feasibility Study- Approved • Grid Interconnection Study- Approved • Initial Environment Assessment- Approved • EPC and O&M Agreements Signed • Term sheets obtained from Project Lenders

4. THE PROJECT & KEY CONSIDERATIONS

Pakistan has a huge wind potential which can be effectively and efficiently utilized for the economical generation of Power. The coastal belt of Pakistan is blessed with a wind corridor that is 60 km wide (Gharo -Kati Bandar) and 180 km long (up to Hyderabad). This corridor has potential of 50,000 MW of electricity generation through wind energy that is ready to be exploited. Currently fifteen (15) wind energy projects having a combined capacity of 788.5 MW are operational and 9 wind energy projects having a combined capacity of 445.8 MW are at different stages of construction.

In line with the objectives of the Government of Pakistan, this Project supports the following environmental and strategic objectives:

(a) reducing dependence on fossil fuels for thermal power generation;
(b) increasing diversity in Pakistan's electricity generation mix;
(c) reducing greenhouse gas emissions through avoidance of thermal power generation; and
(d) helping in reduction of the exorbitant trade deficit.

The key considerations are summarized as follows:

i. The tariff applied for, as with current tariffs of wind power, is amongst the all-time lowest in Pakistan.

ii. The tariff for wind is lower than that of other technologies including coal and recently awarded hydro projects, and equivalent to RLNG projects, with the advantage of no fuel pass through component

iii. The integration of wind power presents no technical challenges on the grid, as evidenced by the approval NTDC has granted for the Grid Interconnection Study for wind power projects totaling 1224 MW; thereby establishing the technical capacity of the grid to sustain these projects. There is no instability caused by integration of these power plants in the national grid. The timing of these plants to come into operations is also in-line with NTDC's plans to make the required infrastructure for them.

5. PROJECT COST AND TARIFF

5.1 PROJECT COST SUMMARY

The total Project Cost, expressed in United States Dollars, has been calculated after thorough analysis, evaluation and understanding of the dynamics that affect the development and operation of a wind power projects. The reference exchange rates used to convert the relevant costs into United States Dollars are USD 1 = PKR 105.

For NEPRA's benefit and approval, a summary of the Project Cost is given below:

INVESTMENT / COST	US$
EPC COST	75,000,000
NON-EPC & PROJECT DEVELOPMENT COST	3,510,500
PRE-COD INSURANCE COST	500,000
FINANCIAL CHARGES	1,777,736
INTEREST DURING CONSTRUCTION	4,115,921
TOTAL PROJECT COST	84,904,157

5.2 DETAILS OF PROJECT COST

5.2.1 EPC Cost:

The breakup of costs contained in the EPC Agreement are as follows:

COST HEAD	US$ (MILLION)
OFFSHORE AGREEMENT	64.40
ONSHORE AGREEMENT	10.60
TOTAL EPC COST	75.00

The EPC Cost includes the cost of 20 wind turbine generators, civil works, electrical equipment (balance of plant), together with ancillary equipment and other goods, systems and machinery and includes the cost of, *inter alia*, the erection, testing, completion and commissioning of the equipment and construction of the facility that is capable of fulfilling the intended purpose.

The EPC Cost also includes costs for: staff accommodation (construction of the camp buildings), supply of drinking water and electricity (to camp buildings), catering services for the staff, certain project vehicles, standby generator (including fuel), site security during construction period and construction of internal access roads.

Since foreign financing with DEG is involved, there will not be requirement of opening LC in favor of EPC contractor. However, in case the Company is required to provide LC confirmation cost for base equity LC and other LCs related to securing the sponsors obligations under the financing agreements, than such costs shall be claimed at true-up on the basis of actual cost incurred.
The Project Company will pay, as mobilization advance, 25% (aggregate) of the total amounts payable to the EPC Contractor pursuant to the EPC Agreements upon achievement of, *inter alia*, the following milestones:

(a) issuance of 'Notice to Proceed'; and

(b) tariff determination by NEPRA.

The above costs are subject to escalations in accordance with the EPC Agreement if the above milestones are not timely achieved.

5.2.2 Non-EPC and Project Development Cost:

This cost head includes the cost for development of Project, land cost and includes all costs, fees and expenses incurred or to be incurred for such purpose. A total of US$ 3.51 million has been estimated under this head. These costs include costs of:

- Feasibility study costs including cost for Topographical survey of land, Geological and geotechnical study, Project layout study, and electrical study; and Transportation study etc.
- Costs related to the performance guarantee to be furnished to EDGOS / AEDB;
- Costs related to the Power Purchaser letter of credit to be furnished to the Power Purchaser pursuant to the provisions of the EPA;
- Various regulatory fees to be paid to NEPRA;
- Costs incurred during Project Company formation;
- Project Company staff salaries, allowances and other benefits;
- Project Company head office – development and running expenses during construction period;
- Travelling costs of Project Company staff for arrangement of financing agreements;
- Cost of security arrangement for the Project;
- Costs relating to various permits for the Project; and
- Project advisors, including cost of Local and Foreign Financial Advisors, Technical Advisors, Independent Engineers, Insurance Advisor, Audit and Tax Advisors, Security Advisors, Carbon Credit Advisors etc. and their travelling cost related to financial close.

Any other cost that relates to development and construction of the Project, if incurred, will be provided at True-up stage.

5.2.3 Pre-COD Insurance Cost:

Pre-COD Insurance Cost covers the insurance cost of the Project Company's assets during construction and the same are incurred prior to the commercial operations date (**COD**) of the Project. These cost estimates have been developed based on the Project Company's determination to obtain Pre-COD insurance at relatively lower rates (0.67% of EPC cost).

However, in the event the Project Company cannot arrange the insurance at 0.67%, due to any reasons beyond its control, NEPRA is requested to allow the actual Pre-COD Insurance Cost at actual up to 0.75% of the EPC cost as is allowed in case of other wind power projects.

The Project Company, in view of the practices set by other IPPs in Pakistan and in accordance with the requirements set out by the lenders funding the Project, intends to procure the following insurances during the construction phase of the Project:

(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 Startup Insurances; and
(f) Comprehensive General Liability.

The premiums payable under the above stated Pre-COD insurances do not include the administrative surcharge, the Federal Insurance Fee and the Federal Excise Duty, and the Project Company prays that the same kindly be allowed by NEPRA as part of the One-Time Adjustments allowed at the time of COD.

5.2.4 Financial Charges

Financial Charges include the costs related to the debt financing of the Project. Such costs include, *inter alia*, the lenders' up-front fee and commitment fee; mandate and processing fee, fees payable, and stamp duty applicable on the financing documents; agency fee; security trustee fee; lenders' Project monitoring fee and the fees for the lenders' various advisors.

These financial charges are in line with the prevailing market conditions and practices applicable for project financing transactions and as allowed by NEPRA in its other tariff determinations. The term sheets for arrangement of debt financing agreed with the lenders are attached with this Tariff Petition as ***Annexure G***.

The Project Company requests NEPRA that as the Project Company has not considered any duties and taxes on account of Financial Fees and Charges, any duties and taxes if applicable on account of these costs may kindly be allowed as adjustment for actual cost at the time of COD.

5.2.5 Interest During Construction

The Interest During Construction (the **IDC**) has been calculated on the basis of the term sheets executed between the Project Company and the lenders, which stipulates a base rate equal to 3 months LIBOR plus a margin of 450 basis points (USD financing), 3 months KIBOR plus a margin of 250 basis points (PKR financing).

Actual IDC, however, shall be subject to change depending on the fluctuations in base rate (i.e. 3-month LIBOR and 3-month KIBOR), funding requirement (draw-downs) 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.

BASIS FOR IDC CALCULATIONS		
	FCY	**LCY**
BASE RATE	0.60%	6.00%
SPREAD	4.50%	2.50%
TOTAL INTEREST RATE	**5.10%**	**8.50%**

IDC, at this stage, is an estimated figure, which is adjustable at COD, based on actual LIBOR, actual KIBOR, timing and amount of loans drawdown during the Project construction period after financial close, therefore, it is prayed that NEPRA kindly allow adjustment for the same at the time of tariff true-up at COD.

5.2.6 Duties & Taxes

Duties and Taxes of non-refundable nature shall be adjusted at Commercial Operations Date, based on the actual cost incurred for which the Project Company shall submit documentary evidence to the satisfaction of the Authority.

6. PROJECT FUNDING STRUCTURE (DEBT & EQUITY)

6.1 THE FUNDING ARRANGEMENT

The Project Cost will be funded on the basis of a Debt: Equity ratio of 75:25, thereby resulting in the following capital structure for the Project:

		USD IN '000
DEBT	**FOREIGN: LOCAL (50:50)**	63,678
EQUITY		21,226
TOTAL PROJECT COST		84,904

6.2 BRIEF ABOUT DEBT AND EQUITY FINANCING

The envisaged debt-equity structure of the Project is 75:25 implying a total debt requirement of USD 63,678,118 (based on a project cost of USD 84,904,157).

The debt financing will be funded in the following manner:

	Institution	**USD IN '000**
FCY	DEG	31,839
LCY	Bank AlHabib	31,839
Total		**63,678**

Debt amount under FCY arrangement will be denominated in USD (repayment in USD, interest payments to be indexed to LIBOR).

Debt amount under LCY arrangement will be denominated in PKR (repayment in PKR, interest payments to be indexed to KIBOR).

Based on the current Project cost estimates, the equity required to be injected by the Sponsor amounts to USD 21.23 million. The Sponsors will subscribe for 100% of the equity requirement.

6.3 EQUITY AND RETURN ON EQUITY DURING CONSTRUCTION (ROEDC)

The Return on Equity ("ROE") and Return on Equity during Construction ("ROEDC") have been estimated separately and the same are provided under Reference Tariff Schedule.

Project Company hereby requests:

- ROE of 15% (IRR based) return on invested equity – the rate of 15% is in line with NEPRA's Benchmark Tariff for Wind determination 27th January 2017.
- ROEDC at a rate of 15% over the remaining life of the Project.

It is to be noted 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 ROE-DC, at actual as a pass-through item under the tariff.

Carbon Credits

Wind Power is a clean form of energy and will reduce CO2 emission. The Project Company intends to register for CDM emission reduction program. In case any income is generated from CDM, the same shall be shared in accordance GoPs prevailing policy.

6.4 DEBT SERVICING

The capital structure of the Project is envisaged at 75:25 (Debt: Equity).

6.4.1 Terms of Debt Financing:

The following terms for financing the debt portion of the Project Cost have been agreed and locked, between the Project Company and the lenders, through execution of the financing term sheets attached at ***Annexure G***:

Cost Head	**Terms**	
Total Project Value USD M	84.90	
Total Value of Debt @ 75% of total project Value USD M	63.68	
	FCY	**LCY**
Value of Debt	31.84	31.84
Base Rate	0.6%	6.0%
Spread	4.5%	2.5%
Debt Markup	5.1%	8.5%
Repayment Period	13 years	13 years
Grace Period	24 months	18 months
Re-Payment Schedule	Equal Quarterly	Equal Quarterly

7. OPERATIONAL COSTS

7.1 UNDERSTANDING & BENCHMARKS

The Project Company has finalised the O&M arrangement with Hydrochina International Engineering Company Limited (**O&M Contractor**), wherein the initial term of O&M arrangement for the Project will be two (2) years. Under the arrangement the O&M Contractor shall be responsible for provision or procurement and performance of all the works, services, supplies and other activities including management services necessary to operate and maintain the Project to ensure energy production is maximized and that the Project is operated and maintained in accordance with the applicable performance standards, agreed environmental-social & monitoring plans and prudent operating practices.

In this regard, kindly note that the Project Company has proposed O&M cost in line with NEPRA's Benchmark Tariff for Wind determination 27th January 2017.

It is the humble request of the Project Company that the O&M costs presented below may kindly be allowed by NEPRA in order to ensure smooth, efficient, and effective operation of the Project.

This component caters for the cost of services rendered by the O&M operator that are dependent on the operation of the Project thereby determinable on a kWh basis. This component also includes costs expected to be incurred by the project locally; these include costs associated with local staff, administrative expenses, corporate fees, audit fees, advisory fees etc This component also includes cost associated with replacement of parts necessitated due to regular operation / normal wear and tear. The O&M cost will be incurred in local as well as foreign currency – percentage of local: foreign components is specified below along with indexations applicable on the same:

Sub-component	Percentage	Indexation
Local	20%	Pakistan CPI (General)
Foreign	80%	• US CPI (all urban consumers) • PKR/USD indexation

7.3 INSURANCE DURING O&M

The 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. Insurances are required to be maintained throughout the life of the Project. 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. Project has requested that an annual insurance cost at a rate of 0.5% of the EPC cost be allowed.

	USD (PER ANNUM)	INDEXATION
INSURANCE COST	375,000	PKR/USD Indexation

The insurance cost (for the operations phase) set out in the Tariff Petition does not, however, covers the administrative surcharge, Federal Excise Duty and Federal Insurance Fee, that might be applicable on the insurance cost, the same should be treated as a pass-through item under the tariff determination.

8. REFERENCE TARIFF & DEBT SCHEDULE

8.1 TARIFF CONTROL PERIOD

As the Project is 75% debt funded with loan tenure of 13 years for repayment, this means that there will be higher debt service cost requirements in the first 13 years of the Project. In the last 12 years of the Project, the tariff will be decreased due to no debt service related costs.

The proposed tariff is for the life of the Project i.e. term of the EPA, signed with the Purchaser, which is 25 years from COD. The tariff is divided into two (02) bands i.e. year 1 – 13 and year 14 – 25 to cover the variations due to the debt repayment period.

8.2 SUMMARY OF REFERENCE TARIFF

A summarized Reference Generation Tariff table setting out the two bands is provided below:

PKR /kWh

		YEARS	1 – 13	14 – 25
FIXED O&M	LOCAL		0.2455	0.2455
	FOREIGN		0.9822	0.9822
ROE			2.0573	2.0573
ROEDC			0.2649	0.2649
DEBT SERVICING	LOCAL		2.6299	0.0000
	FOREIGN		2.1744	0.0000
INSURANCE			0.2423	0.2423
TOTAL			8.5966	3.7923
TOTAL (US CENTS/KWH)			8.1873	3.6117
LEVELISED TARIFF (US CENTS/KWH)			7.1924	

8.3 REFERENCE TARIFF

Year	O&M Foreign	O& M Local	Insurance	ROE	ROED C	Local Financing		Foreign Loan		Tariff	
						Principal	Mark-up	Principal	Mark-up		
	Rs./kWh									Rs./kWh	US ¢/kWh
1	0.9822	0.2455	0.2423	2.0573	0.2649	0.9097	1.7202	1.1469	1.0275	8.5966	8.1873
2	0.9822	0.2455	0.2423	2.0573	0.2649	0.9895	1.6404	1.2065	0.9679	8.5966	8.1873
3	0.9822	0.2455	0.2423	2.0573	0.2649	1.0763	1.5536	1.2692	0.9052	8.5966	8.1873
4	0.9822	0.2455	0.2423	2.0573	0.2649	1.1708	1.4591	1.3352	0.8392	8.5966	8.1873
5	0.9822	0.2455	0.2423	2.0573	0.2649	1.2735	1.3564	1.4046	0.7698	8.5966	8.1873
6	0.9822	0.2455	0.2423	2.0573	0.2649	1.3853	1.2447	1.4776	0.6968	8.5966	8.1873
7	0.9822	0.2455	0.2423	2.0573	0.2649	1.5068	1.1231	1.5545	0.6200	8.5966	8.1873
8	0.9822	0.2455	0.2423	2.0573	0.2649	1.6390	0.9909	1.6353	0.5392	8.5966	8.1873
9	0.9822	0.2455	0.2423	2.0573	0.2649	1.7829	0.8471	1.7203	0.4542	8.5966	8.1873
10	0.9822	0.2455	0.2423	2.0573	0.2649	1.9393	0.6906	1.8097	0.3647	8.5966	8.1873
11	0.9822	0.2455	0.2423	2.0573	0.2649	2.1095	0.5204	1.9038	0.2707	8.5966	8.1873
12	0.9822	0.2455	0.2423	2.0573	0.2649	2.2946	0.3353	2.0027	0.1717	8.5966	8.1873
13	0.9822	0.2455	0.2423	2.0573	0.2649	2.4959	0.1340	2.1068	0.0676	8.5966	8.1873
14	0.9822	0.2455	0.2423	2.0573	0.2649	0.0000	0.0000	0.0000	0.0000	3.7923	3.6117
15	0.9822	0.2455	0.2423	2.0573	0.2649	0.0000	0.0000	0.0000	0.0000	3.7923	3.6117
16	0.9822	0.2455	0.2423	2.0573	0.2649	0.0000	0.0000	0.0000	0.0000	3.7923	3.6117
17	0.9822	0.2455	0.2423	2.0573	0.2649	0.0000	0.0000	0.0000	0.0000	3.7923	3.6117
18	0.9822	0.2455	0.2423	2.0573	0.2649	0.0000	0.0000	0.0000	0.0000	3.7923	3.6117
19	0.9822	0.2455	0.2423	2.0573	0.2649	0.0000	0.0000	0.0000	0.0000	3.7923	3.6117
20	0.9822	0.2455	0.2423	2.0573	0.2649	0.0000	0.0000	0.0000	0.0000	3.7923	3.6117
21	0.9822	0.2455	0.2423	2.0573	0.2649	0.0000	0.0000	0.0000	0.0000	3.7923	3.6117
22	0.9822	0.2455	0.2423	2.0573	0.2649	0.0000	0.0000	0.0000	0.0000	3.7923	3.6117
23	0.9822	0.2455	0.2423	2.0573	0.2649	0.0000	0.0000	0.0000	0.0000	3.7923	3.6117
24	0.9822	0.2455	0.2423	2.0573	0.2649	0.0000	0.0000	0.0000	0.0000	3.7923	3.6117
25	0.9822	0.2455	0.2423	2.057	0.2649	0.0000	0.0000	0.0000	0.0000	3.7923	3.6117

				3							
	Levelized Tariff									**7.5520**	**7.1924**

8.4 REFERENCE DEBT SERVICING SCHEDULE-LOCAL FINANCING

Repayment Period	Principal Repayment - US$	Principal Repayment - Tariff Component (Rs/kWh)	Interest - US$	Interest - Tariff Component (Rs/kWh)	Installments US$	Installment - Tariff Component (Rs/kWh)
1	340,937	0.2203	676,580	0.4372	1,017,517	0.6575
2	348,182	0.2250	669,335	0.4325	1,017,517	0.6575
3	355,581	0.2298	661,936	0.4277	1,017,517	0.6575
4	363,137	0.2346	654,380	0.4228	1,017,517	0.6575
5	370,853	0.2396	646,663	0.4178	1,017,517	0.6575
6	378,734	0.2447	638,783	0.4128	1,017,517	0.6575
7	386,782	0.2499	630,735	0.4076	1,017,517	0.6575
8	395,001	0.2552	622,516	0.4022	1,017,517	0.6575
9	403,395	0.2607	614,122	0.3968	1,017,517	0.6575
10	411,967	0.2662	605,550	0.3913	1,017,517	0.6575
11	420,722	0.2719	596,795	0.3856	1,017,517	0.6575
12	429,662	0.2776	587,855	0.3798	1,017,517	0.6575
13	438,792	0.2835	578,725	0.3739	1,017,517	0.6575
14	448,116	0.2896	569,400	0.3679	1,017,517	0.6575
15	457,639	0.2957	559,878	0.3618	1,017,517	0.6575
16	467,364	0.3020	550,153	0.3555	1,017,517	0.6575
17	477,295	0.3084	540,222	0.3491	1,017,517	0.6575
18	487,438	0.3150	530,079	0.3425	1,017,517	0.6575
19	497,796	0.3217	519,721	0.3358	1,017,517	0.6575
20	508,374	0.3285	509,143	0.3290	1,017,517	0.6575
21	519,177	0.3355	498,340	0.3220	1,017,517	0.6575
22	530,209	0.3426	487,307	0.3149	1,017,517	0.6575
23	541,476	0.3499	476,040	0.3076	1,017,517	0.6575
24	552,983	0.3573	464,534	0.3002	1,017,517	0.6575
25	564,734	0.3649	452,783	0.2926	1,017,517	0.6575
26	576,734	0.3727	440,783	0.2848	1,017,517	0.6575
27	588,990	0.3806	428,527	0.2769	1,017,517	0.6575
28	601,506	0.3887	416,011	0.2688	1,017,517	0.6575
29	614,288	0.3969	403,229	0.2606	1,017,517	0.6575
30	627,342	0.4054	390,175	0.2521	1,017,517	0.6575
31	640,673	0.4140	376,844	0.2435	1,017,517	0.6575
32	654,287	0.4228	363,230	0.2347	1,017,517	0.6575
33	668,190	0.4318	349,326	0.2257	1,017,517	0.6575
34	682,389	0.4409	335,127	0.2165	1,017,517	0.6575
35	696,890	0.4503	320,627	0.2072	1,017,517	0.6575
36	711,699	0.4599	305,818	0.1976	1,017,517	0.6575
37	726,823	0.4696	290,694	0.1878	1,017,517	0.6575
38	742,268	0.4796	275,249	0.1779	1,017,517	0.6575
39	758,041	0.4898	259,476	0.1677	1,017,517	0.6575
40	774,149	0.5002	243,368	0.1573	1,017,517	0.6575
41	790,600	0.5109	226,917	0.1466	1,017,517	0.6575

42	807,400	0.5217	210,117	0.1358	1,017,517	0.6575
43	824,557	0.5328	192,959	0.1247	1,017,517	0.6575
44	842,079	0.5441	175,438	0.1134	1,017,517	0.6575
45	859,974	0.5557	157,543	0.1018	1,017,517	0.6575
46	878,248	0.5675	139,269	0.0900	1,017,517	0.6575
47	896,911	0.5795	120,606	0.0779	1,017,517	0.6575
48	915,970	0.5919	101,547	0.0656	1,017,517	0.6575
49	935,434	0.6044	82,082	0.0530	1,017,517	0.6575
50	955,312	0.6173	62,204	0.0402	1,017,517	0.6575
51	975,613	0.6304	41,904	0.0271	1,017,517	0.6575
52	996,345	0.6438	21,172	0.0137	1,017,517	0.6575

8.5 REFERENCE DEBT SERVICING SCHEDULE-FOREIGN FINANCING

Repayment Period	Principal Repayment - US$	Principal Repayment - Tariff Component (Rs/kWh)	Interest - US$	Interest - Tariff Component (Rs/kWh)	Installments US$	Installment - Tariff Component (Rs/kWh)
1	435,338	0.2813	405,948	0.2623	841,286	0.5436
2	440,889	0.2849	400,397	0.2587	841,286	0.5436
3	446,510	0.2885	394,776	0.2551	841,286	0.5436
4	452,203	0.2922	389,083	0.2514	841,286	0.5436
5	457,968	0.2959	383,318	0.2477	841,286	0.5436
6	463,808	0.2997	377,478	0.2439	841,286	0.5436
7	469,721	0.3035	371,565	0.2401	841,286	0.5436
8	475,710	0.3074	365,576	0.2362	841,286	0.5436
9	481,775	0.3113	359,511	0.2323	841,286	0.5436
10	487,918	0.3153	353,368	0.2283	841,286	0.5436
11	494,139	0.3193	347,147	0.2243	841,286	0.5436
12	500,439	0.3234	340,847	0.2202	841,286	0.5436
13	506,820	0.3275	334,466	0.2161	841,286	0.5436
14	513,282	0.3317	328,004	0.2119	841,286	0.5436
15	519,826	0.3359	321,460	0.2077	841,286	0.5436
16	526,454	0.3402	314,832	0.2034	841,286	0.5436
17	533,166	0.3445	308,120	0.1991	841,286	0.5436
18	539,964	0.3489	301,322	0.1947	841,286	0.5436
19	546,849	0.3534	294,437	0.1903	841,286	0.5436
20	553,821	0.3579	287,465	0.1857	841,286	0.5436
21	560,882	0.3624	280,404	0.1812	841,286	0.5436
22	568,033	0.3670	273,253	0.1766	841,286	0.5436
23	575,276	0.3717	266,010	0.1719	841,286	0.5436
24	582,611	0.3765	258,675	0.1671	841,286	0.5436
25	590,039	0.3813	251,247	0.1623	841,286	0.5436
26	597,562	0.3861	243,724	0.1575	841,286	0.5436
27	605,181	0.3910	236,105	0.1526	841,286	0.5436
28	612,897	0.3960	228,389	0.1476	841,286	0.5436
29	620,711	0.4011	220,575	0.1425	841,286	0.5436
30	628,625	0.4062	212,661	0.1374	841,286	0.5436

31	636,640	0.4114	204,646	0.1322	841,286	0.5436
32	644,757	0.4166	196,529	0.1270	841,286	0.5436
33	652,978	0.4219	188,308	0.1217	841,286	0.5436
34	661,304	0.4273	179,982	0.1163	841,286	0.5436
35	669,735	0.4328	171,551	0.1108	841,286	0.5436
36	678,274	0.4383	163,012	0.1053	841,286	0.5436
37	686,922	0.4439	154,364	0.0997	841,286	0.5436
38	695,681	0.4495	145,605	0.0941	841,286	0.5436
39	704,550	0.4553	136,735	0.0884	841,286	0.5436
40	713,534	0.4611	127,752	0.0825	841,286	0.5436
41	722,631	0.4669	118,655	0.0767	841,286	0.5436
42	731,845	0.4729	109,441	0.0707	841,286	0.5436
43	741,176	0.4789	100,110	0.0647	841,286	0.5436
44	750,626	0.4850	90,660	0.0586	841,286	0.5436
45	760,196	0.4912	81,090	0.0524	841,286	0.5436
46	769,889	0.4975	71,397	0.0461	841,286	0.5436
47	779,705	0.5038	61,581	0.0398	841,286	0.5436
48	789,646	0.5102	51,640	0.0334	841,286	0.5436
49	799,714	0.5167	41,572	0.0269	841,286	0.5436
50	809,910	0.5233	31,376	0.0203	841,286	0.5436
51	820,237	0.5300	21,049	0.0136	841,286	0.5436
52	830,695	0.5368	10,591	0.0068	841,286	0.5436

9. INDEXATIONS, ESCALATIONS AND COST ADJUSTMENT

9.1 INDEXATIONS

It is submitted that indexations be made on 1st January, 1st April, 1st July and 1st October respectively, on the basis of latest information available with respect to Consumer Price Index (CPI) (General), as notified by Pakistan Bureau of Statistics, US CPI (for all Urban-consumer) as notified by US Bureau of Labor Statistics and exchange rate as notified by National Bank of Pakistan.

9.1.1 Foreign O&M Cost Component

The Reference Foreign O&M Cost Component of the O&M Cost shall be quarterly indexed to both:

(a) the USD/PKR exchange rate, based on the revised TT & OD selling rate of USD as notified by the National Bank of Pakistan; and

(b) US CPI (for all Urban-consumer), as issued by the US Bureau of Labor Statistics.

The applicable formula shall be as follows:

$$O\&M_{(FRev)} = \text{Relevant Reference Generation Tariff Component} * (US\ CPI_{(Rev)} / US\ CPI_{(Ref)}) * (FX\ USD_{(Rev)} / FX\ USD_{(Ref)})$$

Where:

$O\&M_{(FRev)}$ = the revised Foreign O&M Cost Component applicable for the relevant quarter

$US\ CPI_{(Rev)}$ = the revised US CPI (for all Urban-consumers) for the month prior to the month in which indexation is applicable, as issued by the US Bureau of Labor Statistics

$US\ CPI_{(Ref)}$ = the US CPI (for all Urban-consumers) for the relevant month as issued by the US Bureau of Labor Statistics.

$FX\ USD_{(Rev)}$ = the revised TT & OD selling rate of PKR/USD as on the date on which indexation is applicable, as notified by the National Bank of Pakistan.

$FX\ USD_{(Ref)}$ = Reference TT & OD selling rate of PKR/USD, of PKR 105 for USD1

9.1.2 Local O&M Cost Component

The Reference Local O&M Cost Component of the O&M Cost shall be quarterly indexed to the CPI (General) in Pakistan, as notified by the Pakistan Bureau of Statistics based on the following formula:

$$O\&M_{(LRev)} = \text{Relevant Reference Generation Tariff Component} * (CPI_{(Rev)} / CPI_{(Ref)})$$

Where:

$O\&M_{(LRev)}$ = the revised Local O&M Cost Component applicable for the relevant quarter

$CPI_{(Rev)}$ = the revised CPI (General) in Pakistan for the month prior to the month in which indexation is applicable, as notified by the Federal Bureau of Statistics.

$CPI_{(Ref)}$ = the CPI (General) in Pakistan for the relevant month as notified by the Federal Bureau of Statistics.

9.1.3 Insurance Cost

The Reference Insurance Cost Component shall be annually indexed to USD/PKR exchange rate, based on the revised TT & OD selling rate of USD notified by the National Bank of Pakistan.

(a) Indexation Formula

The indexation of the Insurance Cost Component shall be based on the following formula:

$$Insurance_{(Rev)} = \text{Relevant Reference Generation Tariff Component} * (FX\ USD_{(Rev)} / FX\ USD_{(Ref)})$$

Where:

$Insurance_{(Rev)}$ = the revised Insurance Cost Component applicable for the relevant year

$FX\ USD_{(Rev)}$ = the revised TT & OD selling rate of PKR/USD as on the date on which indexation is applicable, as notified by the National Bank of Pakistan.

$FX\ USD_{(Ref)}$ = Reference TT & OD selling rate of PKR/USD, of PKR 105 for USD1

9.1.4 Return on Equity and Return on Equity during Construction

In line with NEPRA's previous determinations, the ROE and ROEDC the Reference Generation Tariff shall be quarterly indexed to the USD/PKR exchange rate, based on the

revised TT & OD selling rate of USD notified by the National Bank of Pakistan.

The applicable formula shall be as follows:

$$ROE_{(Rev)} = \text{Relevant Reference Generation Tariff Component}^{*} \times (FX\ USD_{(Rev)}/FX\ USD_{(Ref)})$$

$$ROE\text{-}DC_{(Rev)} = \text{Relevant Reference Generation Tariff Component}^{*} \times (FX\ USD_{(Rev)}/FX\ USD_{(Ref)})$$

Where:

$ROE_{(Rev)}$ = the revised ROE component applicable for the relevant quarter

$ROE\text{-}DC_{(Rev)}$ = the revised ROE-DC component applicable for the relevant quarter

FX USD(Rev) = the revised TT & OD selling rate of PKR/USD as on the date on which indexation is applicable, as notified by the National Bank of Pakistan.

$FX\ USD_{(Ref)}$ = Reference TT & OD selling rate of PKR/USD, of PKR 105 for USD1

9.1.5 Debt Component

a) **Local Financing:** The principal and interest component of local financing will remain unchanged throughout the term except for the adjustment due to variation in 3 months KIBOR, while spread of 2.5% on KIBOR remaining the same, according to the following formula:

$$\Delta I = P_{(Rev)} * (KIBOR_{(Rev)} - 6.0\%)/4$$

Where:

ΔI = the variation in interest charges applicable corresponding to variation in 3 month KIBOR. ΔI can be positive or negative depending upon whether $KIBOR_{(Rev)}$ > or < 6.0%. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each period under adjustment applicable on bi-annual basis.

$P_{(Rev)}$ = the outstanding principal on a quarterly basis at the relevant calculation dates.

b) **Foreign Loan LIBOR** - The principal and interest component of foreign loan will remain unchanged throughout the term except for the adjustment due to variation in 3 months LIBOR, while spread of 4.5% on LIBOR remaining the same, according to the following formula:

$$\Delta I = P_{(Rev)} * (LIBOR_{(Rev)} - 0.6\%)/4$$

Where:

ΔI = the variation in interest charges applicable corresponding to variation in 3 month LIBOR. ΔI can be positive or negative depending upon whether $LIBOR_{(Rev)}$ > or < 0.6%. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each period under adjustment applicable on bi-annual basis.

$P_{(Rev)}$ = the outstanding principal on a quarterly basis at the relevant calculation dates.

9.2 Adjustments

The Project Company requests NEPRA to allow adjustment to the total Project Cost for the following items forming part of Project Cost:-

(a) The Principal Repayment and cost of debt to be adjusted at COD as per the actual borrowing composition;

(b) Interest During Construction to be adjusted as per actual based on actual disbursement of loans and prevailing KIBOR and LIBOR rates during the project construction period;

(c) The specific items of Project Cost to be incurred in foreign currency (US$) be adjusted at COD based on the PKR / US$ exchange rate prevailing on the date the transaction was carried out;

(d) Customs duty and other taxes (including SIDS) be adjusted/allowed as per actual;

(e) Any negative financial implications resulting from changes in tax rates, duties etc. and currently applicable sales tax structure may kindly be adjusted in the Project Cost.

(f) Pre-COD Insurance Cost be adjusted at actual subject to a cap of 0.75% of the EPC cost in line with earlier tariff determinations by NEPRA for other IPPs.

(g) Return on Equity be adjusted at COD in order to ensure an IRR based return of 15% on equity (while treating the project as a Build-Own-Operate type project).

(h) ROEDC is to be allowed at the time of COD, as true-up adjustment, based on actual equity injections to the Project by the Project Sponsors.

10. CONSIDERATIONS WITH RESPECT TO EPA

10.1 ENERGY PRODUCTION

The wind studies have been carried out using onsite wind data from a met mast that was installed on 15th of August, 2016. Ten (10) minute interval data from 16.08.2016 to 31.08.2017 having duration of 13 months has been used in the analysis.

Out of the available data, a measurement period of 12 months from Sep, 2016 to Aug, 2017 was selected for the annual average wind speed and wind direction having highest data coverage period with good quality data, which is considered as a bankable time series. Analyzed average wind speed for the selected period is calculated as 7.82 m/s at 90 m height. For the assessment of long-term wind speed, reference data set of EMD-Global Wind Data based on ERA-Interim (EmdERA), EmdIndia and MERRA2 have been considered and resulted in the coefficient of determination of (R^2) > 85%%. Resultantly, the long-term wind speed of 7.73 m/s is calculated at 90m height above ground level (a.g.l.) at the mast location.

Twenty (20) Goldwind wind turbines (GW121-2.5) at 90 m hub height have been used for the Project. The micro-siting was performed based on site-specific topographic map.

The WindPRO (ver.2.9) / WAsP (ver.11) software is used to estimate the wind conditions at each turbine location within the wind farm area based on the measured input wind data at a height of 90 m. The potential influence by all surrounding wind farms has been taken into account for the wake analysis. Losses are occurring along the whole energetic transformation chain from the rotor (kinetic energy) to the substation's delivery point (electricity) and has been considered on basis of turbine specifications and prudent assumptions.

Following losses have been considered to arrive at net energy number from the total gross:

- Wake Effects
- Availability
- Turbine Performance
- Electrical
- Environmental

Additionally, an uncertainty assessment was also carried out. Uncertainty sources are associated to measuring equipment, data acquisition, data processing, energy model development, turbine parameters and energy estimation.

The expected energy output of the Project is determined as 162,498 MWh per annum, which translates into a 37.1% annual capacity factor, and is considered very attractive for wind generation given the precedent cases in the sector and the expectations of NEPRA.

10.2 Wind Risk During operation

In the past cost-plus tariff petitions for wind power projects, the wind risk (i.e. risk of lower than benchmark wind speeds) was borne by the Power Purchaser in line with the Policy for Renewable Energy, 2006. The energy output, for the purpose of tariff computation was determined based on a reference 'benchmark wind speed'. Payments to the Project were adjusted with reference to the benchmark, in accordance with the actual wind speeds observed at the sites. In order to minimize risks and disruptions to the project's cash-flows, the tariffs were adjustable to wind speeds at both higher and lower than the benchmark.

This procedure remains aligned with the spirit of cost plus tariff and is also captured in the Policy for Renewable Energy, 2006.

With the successful growth of the wind power industry in Pakistan, NEPRA began announcing upfront tariffs for wind power projects. Wind risk protection was not included in the upfront tariff regimes as the upfront tariff was considered a 'take it or leave it option', with all opportunities as well as all risks taken by the project developers.

The Petitioner understands that the Power Purchaser, AEDB and NEPRA are not in favor of providing coverage against wind speed risk to project developers. Therefore, the Petitioner has not requested any allowance or provision in the Reference Tariff for coverage against wind risk, provided that the Reference Tariff is approved on the estimated 37.1% annual capacity factor. The Petitioner has accepted all potential risks arising from unpredictable wind speeds, which may result in energy shortfalls during the operations period and the Petitioner is also absorbing all such potential costs (including lender's requirements) related to this aspect.

10.3 Compensation against higher than assumed energy yields

Despite the sophisticated forecasting techniques available, it is impossible to accurately predict the wind speed and wind direction over the course of the life of the Project. Both these parameters affect the energy output of the plant; wind speed directly and wind direction indirectly through '*wake effects*'. It is also pertinent to mention that the annual energy assumed for the purpose of this Petition is based on an average energy output; the Project may experience energy output higher than the benchmark assumption in some years, whereas in other years the energy output may be significantly lower than the benchmark of 162,498 MWh per annum.

As mentioned in the preceding section, ***the Petitioner is bearing the risks associated with the potential of lower than predicted wind speeds***, as well as their further repercussions. Therefore, in order to have an opportunity to recover its potential energy shortfall on account of wind speed, the Petitioner has assumed that any such energy generated over and above the 37.1% capacity factor shall be paid at the full tariff rate to the Project

It is humbly emphasized that the Petitioner should be allowed compensation for energy output above 37.1% capacity factor at the Reference Generation Tariff to cater for the risks of variability in the wind speed, from which the Petitioner can potentially suffer during the life of the Project.

10.4 Non-Project Missed Volume (NPMV)

The Petitioner expects that the Non-Project Missed Volume (**NPMV**) shall be paid by CPPA on the basis of actual generation missed by the Project Company due to the occurrence of a non-project event (**NPE**). Given the sophisticated SCADA systems and forecasting tools (as also specified under the Grid Code Addendum No. 1 (Revision 1)) now available, missed generation can be accurately determined without human intervention; therefore, the same should be compensated at actual – we believe that the aforementioned mechanism is the only fair method which ensures neither party (Project Company or Power Purchaser) are unduly burdened / penalized due to occurrence of the NPE. If such a practical solution is not workable, then firstly, the requirement for having forecasting tools should be removed from the Grid Code Addendum No. 1 (Revision 1), secondly, the Petitioner requests to go with the precedent mechanism of NPMV compensations (as reflected in the previously available tariff determinations and previously executed EPAs).

It is worth highlighting that the Grid Code Addendum No. 1 (Revision 1) provides for levy of penalties on wind IPPs for not remaining within the forecast error thresholds, therefore, while the wind IPPs are now obligated to maintain compliance with such stringent standards for forecasting, the same method for determining projected energy yield should be used for compensating the wind IPPs during the occurrence of a NPE.

11. PASS-THROUGH ITEMS AND TARIFF ASSUMPTIONS

11.1 Pass Through Items

Authority is requested to allow following cost components as pass-through to Project on the basis of actual costs incurred by Project Company or obligated to be paid in relation to the Project pursuant to Laws of Pakistan.

a) No provision of income tax has been provided for in the tariff. If the Project Company is obligated to pay any type of tax, the same should be allowed to the Project Company as pass through.

b) No withholding tax on dividend has been included in the tariff. Authority is requested to allow payment of withholding tax on dividend as pass through at the time of actual payment of dividend.

c) The payments to Workers Welfare Fund and Workers Profit Participation Fund have not been accounted for in the Project budget and have been assumed to be reimbursed as pass through at actual by the power purchaser.

d) Zakat deduction on dividends as required under Zakat Ordinance is considered as a pass through;

e) No tax on income of Project Company (including proceeds against sale of electricity to CPPA) has been assumed. Corporate tax, turn over tax, general sales tax / provincial sales tax and all other taxes, excise duty, levies, fees etc. by any federal / provincial entity including local bodies as and when imposed, shall be treated as a pass through item;

f) No hedging cost is assumed for exchange rate fluctuations during construction and all cost overruns resulting from variations in the exchange rate during construction shall be allowed as pass through;

g) Any costs incurred by Project Company, which are required to be incurred by Power Purchaser pursuant to provisions of EPA shall also be treated as pass through.

h) Taxes and charges that constitute as part of the Project Cost for construction period and operation period shall be treated as pass through.

11.2 Assumptions

The proposed Reference Tariff is based on the following assumptions. A change in any of these assumptions will necessitate a corresponding adjustment in the Reference Tariff:

a) Debt for the Project will be sourced from local and foreign financial institutions. Exact composition of local and foreign debt will be finalized prior to financial close; adjustment against the same will be requested at the time of COD;

b) An exchange rate of PKR 105 /USD has been assumed. Indexation against PKR / USD variations will be permitted for debt servicing payments and all other project costs denominated in foreign currency. Tariff components shall be respectively indexed for exchange rate variations;

c) The timing of drawdown of debt and equity may vary from those specified in this Petition; as such, the Project Cost will be adjusted on the basis of actual IDC at COD. Similarly, ROEDC component will also be updated in the Reference Tariff;

d) Adjustments in Project Cost due to variation in PKR / USD variations, KIBOR and LIBOR fluctuations will also be catered for at the time of COD;

e) Taxes and Custom duties shall be claimed on actual at the time of COD tariff adjustment;

f) Withholding tax at 7.0% on supplies and Onshore Contract. No withholding tax is anticipated on the Offshore Contract. In case there is any change in taxes etc., or additional taxes, fees, excise duty, levies, etc. are imposed. the EPC cost and ultimately the Project cost and the Reference Tariff will need to be adjusted accordingly;

g) The power purchaser will compensate for energy delivered to the power purchaser prior to COD. For this purpose Reference Tariff excluding Debt Servicing Components shall be paid for all energy delivered prior to COD. Payments will be invoiced to the power purchaser as per mechanism specified in the EPA;

h) The power purchaser shall be solely responsible for the financing, engineering, procurement, construction, testing and commissioning of the interconnection and transmission facilities uptill the Project gantry point. Said facilities will be made available to the Project at least on or before the deadline set out in the EPA. Furthermore, the power purchaser will be solely responsible for operation and maintenance of the said interconnection and transmission facilities;

i) Project contingency and maintenance reserves are not included in Reference Tariff calculations. If required by lenders, these will be adjusted accordingly in the Reference Tariff;

j) In case of any unintentional error or omissions, typographic errors, and any genuine assumption being overlooked, the same will be corrected/incorporated and advised to NEPRA as soon as the Project Company becomes aware of it;

k) Any additional indexation or concession allowed by the GOP, NEPRA or any other Govt. entity to any IPP will be allowed to Project Company without any discrimination.

12. TARIFF SUMMARY

In summation, the Project Company herewith most respectfully submits before NEPRA for its approval the matters set out in this Tariff Petition and further prays for NEPRA to kindly approve the following:

YEARS	1 – 13	14 – 25
TARIFF (PKR /KWH)	8.5966	3.7923
TARIFF (US CENTS/KWH)	8.1873	3.6117
LEVELISED TARIFF (US CENTS/KWH)	7.1924	

Furthermore, given the advance stage of the Project, NEPRA is kindly requested to process the Tariff Petition at the earliest thereby enabling the Project Company to proceed further with the development process.

ACT2 WIND (Private) Limited

Dated: 13th December 2017