National Electric Power Regulatory Authority

Islamic Republic of Pakistan

2nd Floor, OPF Building, G-5/2, Islamabad
Ph: 9206500, 9207200, Fax: 9210215
E-mail: registrar@nepra.org.pk

Registrar

No.NEPRA/R/TRF-169/ZEPL-2011/5525-5527
July 19, 2011

Subject: **Determination of the Authority in the Matter of Tariff Petition filed by Zorlu Enerji Pakistan Ltd. (ZEPL) (Case # NEPRA/TRF-169/ZEPL-2011)**
Intimation of Determination of Tariff pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997)

Dear Sir,

Please find enclosed herewith the subject Determination of the Authority along with Annexure-I, II & III (37 pages) in Case No. NEPRA/TRF-169/ZEPL-2011.

2. The Determination is being intimated to the Federal Government for the purpose of notification in the official gazette pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997) and Rule 16(11) of the National Electric Power Regulatory Authority Tariff (Standards and Procedure) Rules, 1998.

3. Please note that only Order of the Authority at para 18 of the Determination relating to the reference tariff, adjustments, indexation & terms & conditions along with Annexure-I, II & III needs to be notified in the official gazette.

Enclosure: As above

(Syed Safeer Hussain)

Secretary,
Ministry of Water & Power,
Government of Pakistan
Islamabad.

CC:

1. Secretary, Cabinet Division, Cabinet Secretariat, Islamabad
2. Secretary, Ministry of Finance, Islamabad.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
(NEPRA)

***

Case No. NEPRA TRF-169/ZEPL-2011
Dated June ____, 2011

Petitioner

Zorlu Enerji Pakistan Ltd. (ZEPL)

Authority

Zafar Ali Khan
Member

30/6/11

Maqbool Ahmad Khawaja
Member

My dissenting note attached
7/7

Ghiasuddin Ahmed
Member

1/7

Shaukat Ali Kundi
Vice Chairman/Member

18.07.2011

Khalid Saeed
Chairman

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Determination of the Authority in the matter of
Tariff Petition filed by Zorlu Enerji Pakistan Ltd (ZEPL)
(Case No. NEPRA/TRF-169/ZEPL-2011)

Background

Zorlu Enerji Pakistan Ltd (ZEPL) filed first tariff petition in October 2007, for approval of generation tariff in respect of its 49.5 MW wind power plant at Jhampir District Thatta. The Authority's Determination was made on 18th December 2007, whereby ZEPL was allowed a levelized tariff of US Cents 10.4929/kWh for the 20 years life of the project.

2. ZEPL filed second tariff petition in April 2008, for approval of generation tariff in respect of its 49.5 MW wind power plant, whereby ZEPL requested for approval of increased EPC cost and revised tariff due to change of its equipment supplier from Vensys Czeck Republic to Goldwind China. The Authority's Determination was made on 23rd May 2008, while approving a levelized tariff of US Cents 12.1057/kWh.

3. ZEPL filed a fresh (instant) tariff petition on March 11, 2011 for determination of generation tariff in respect of its enhanced capacity of 56.4 MW Wind Power plant to be set up at Jhampir district Thatta in the Province of Sindh. Notice for admission and the Public Hearing for participation of all the stakeholders was published in the daily newspapers on April 16, 2011. Written notices were also sent to the key stakeholders for their participation in the tariff setting process either through their comments or becoming a party to the case as Intervener. The public hearing of the Petition was held on May 5, 2011 at main NEPRA office which was attended by CPPA, AEDB, the Petitioner and other stakeholders. The Authority received written comments from the National Transmission & Despatch Company Limited and Hyderabad Electric Supply Company (HESCO), Mr. Akhtar Ali representing Proplan Associates and the Federal Chamber of Commerce and Industry. The comments offered by the aforementioned commentators have been discussed at the relevant pages of this determination. However, no intervention request was filed for the case.

4. ZEPL in its petition stated that it has already installed and commissioned 6 MW capacity comprising 5 Vensys wind turbine generators (WTGs) of 1.2 MW each, financed from its own sources. For supply of other 29 WTGs of 1.5 MW each it had signed an Equipment Supply Contract with Goldwind Science & Creation Windpower Equipment Company Ltd, China which could not materialize due to differences with the equipment supplier on commercial terms, lack of interest shown by it in the Pakistan market and non-provision of financing for the project from lenders i.e. Standard Chartered Bank Limited. Consequently ZEPL now has signed a fresh equipment supply contract with Vestas, for supply of 28 WTGs of 1.8 MW capacity each (total 50.4 MW). With the existing 6 MW already installed the total capacity of its wind farm would be 56.4 MW for which it has sought approval of a levelized tariff of US cents 15.0188 (Rs. 12.7743 at PKR/USD rate of Rs. 85.0553).

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

Submissions of the Petitioner:

5. The technical and financial details of the wind power project as provided by the petitioner are given hereunder:

- Zorlu Enerji incorporated Zorlu Enerji Pakistan Limited (ZEPL), under the Companies Ordinance 1984 in September 2007.

Project Company	**Zorlu Enerji Pakistan Limited**
Main Sponsors	Zorlu Enerji Elektrik Üretim A.Ş, Turkey
Project Capacity	56.4 MW
Project Location	Jhampir, District Thatta, Province of Sindh, Pakistan
Land Area	1,148 Acres
Concession Period	20 years from Commercial Operations Date (5 Years Extension)
Power Purchaser	National Transmission and Dispatch Company Limited (through Central Power Purchasing Agency)
Wind Turbines	**Type of Turbine** / **Vensys62** / **VESTAS V90** **Turbine Capacity [kW]**: 1,200 / 1,800 **Number of WTGs**: 5 / 28 **Hub Height [m]**: 69 / 80 **Rotor Diameter [m]**: 62 / 90 **Rotor Area [m²]**: 3,019 / 6,362
Energy Production Estimate	167.659 GWh per Annum
EPC Contractors	Vestas and Zorlu Industrial Pakistan (Pvt) Limited
Project Capital Costs	**Amount (US$ in millions)** EPC Cost: 138.800 Project Development & Operating Fixed Assets: 6.161 Financing Charges & Other Fees: 3.759 Insurance During Construction: 1.874 Other Project Costs: 5.762 **Total Project Cost (CAPEX)**: **156.356** Interest During Construction: 5.524 **Total Project Cost (Including IDC)**: **161.880**
Funding Plan	Debt 70%(Local 10% : Foreign 90%) : Equity 30%
Equity	US$ 48.564 million
Long Term Debt	US$ 113.316 million
Lenders	A consortium of foreign and local banks
Lead Arrangers	International Finance Corporation (IFC), Asian Development Bank (ADB), Eco Trade & Development Bank (ETDB) and Habib Bank

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

	Limited (HBL)			
Terms of Long Term Debt	Currency	Pakistan Rupees & US Dollars		
	Loan Term	12 years		
	Grace Period	24 months		
	Repayment Period	10 years		
	Debt Repayment	20 equal semi-annual installments		
	Interest Rate	6 months KIBOR plus 300 basis points & 6 months LIBOR plus 450 basis points		
O&M Contractor	Zorlu O&M Pakistan Limited			
Project Operating Costs	**Description**	**Year 1-2**	**Year 3 - 10**	**Year 11 - 20**
	O&M Cost	3.434	2.709	2.833
	Insurance Cost	1.388	1.388	1.388
	Total Oper. Cost	4.822	4.097	4.221
Levelized Tariff	PKR 12.7743 per kWh		US¢ 15.0188 per kWh	
Applicable GOP Policy	Policy for Development of Renewable Energy for Power Generation 2006			
Technical Advisors	IPEK Energy GmbH			

6. In the light of submission of the Petitioner, comments offered by the stakeholders as well as proceedings of the case, the following main issues have been discussed for consideration and approval of the Authority.

Issues

i) **Change of Equipment Supplier**
ii) **Net Annual Energy Production**
iii) **Project Construction Period**
iv) **EPC Cost**
v) **Non-EPC Cost**
vi) **Debt Service**
vii) **Return on Equity**
viii) **O&M Cost**
ix) **Carbon Credits**
x) **Other Issues**

7. Change of Equipment Supplier

7.1 ZEPL submitted that due to differences on commercial terms and lack of interest of its previous equipment supplier in the Pakistan market and also due to non-availability of project financing from its proposed lenders (Standard Chartered Bank Limited), it was forced to change its equipment supplier. The Authority in its previous determination for ZEPL dated May 23, 2008 had approved its equipment cost based on its fixed price

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

equipment supply contract with Goldwind Science & Creation Windpower Equipment Company Ltd, China, a copy of which was also provided by ZEPL in support of its equipment cost as a documentary evidence.

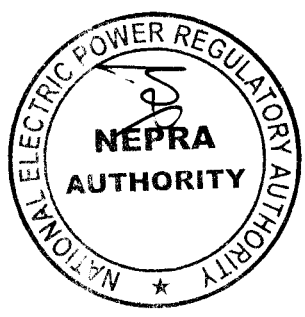
7.2 In the instant petition, ZEPL has revealed that it has terminated its equipment supply contract with Goldwind, China, and signed a new contract with Vestas for supply of wind energy equipment. ZEPL has provided a copy of the Equipment Supply Contract with VESTAS RUZGARENERJISI SISTEMLERI SAN. VE TIC LTD. STI. duly signed by both the parties.

7.3 During the Public Hearing held on May 05, 2011 the petitioner in its presentation, submitted that there were several factors which contributed to ZEPL's decision for change of its equipment supplier. It explained that the first phase of its project comprising five Vensys WTGs of total 6 MW capacity was completed in the mid of year 2009 but the performance of these turbines was adversely affected by high temperatures experienced at the Jhampir site. ZEPL further explained that Vensys, like many other companies from Czech Republic, declared bankruptcy during this time. Therefore, it became impossible for ZEPL to continue working with Vensys. Subsequently it took onboard Goldwind as the equipment supplier for the remaining wind turbines. ZEPL also clarified that the deal between ZEPL and Goldwind could not materialize because Goldwind at that particular time was not interested to operate in the Pakistani market. ZEPL claimed that the Vestas WTGs are much more suitable for Pakistan's climate as they can handle temperatures up to 50°C.

7.4 ZEPL submitted that as a result of this change in the equipment supplier, its EPC cost has increased from previously approved by the Authority of US$ 112.205 million for its 49.5 MW power plant to US$ 138.800 million for its 56.4 MW capacity power plant, whereas the total project cost has now climbed from US$ 121.998 million to US$ 161.880 million for its enhanced 56.4 MW capacity wind power plant.

7.5 ZEPL's decision for change of its equipment supplier from Vensys CKD to Goldwind China and then to Vestas reveals that the previous Equipment Supply Contract submitted to NEPRA by ZEPL had no legal and commercial binding on the either parties. It is, therefore, not sure that the new Equipment Supply Contract with Vestas would materialize or it would also meet the same fate. ZEPL, however, has assured that its Equipment Supply Contract with Vestas is firm and it has already made upfront payment to the equipment supplier as per terms of the contract which is equivalent to 5% of the equipment cost.

7.6 The Power Purchaser (CPPA) in the hearing as well as in its written comments submitted that the EPC cost of US$ 22.876 million for its phase-I (6 MW) as requested by ZEPL is considerably on the higher side. It further submitted that ZEPL has already made an arrangement with HESCO for the sale of energy from its existing facility of 6 MW capacity, which should be continued for the future as well. CPPA suggested that the Authority should consider a separate treatment for ZEPL's already installed existing



facility of 6 MW phase-I Vensys turbines from its 50.4 MW Phase-II 28 Vestas power plant while approving a separate tariff for Phase-I and Phase-II.

7.7 CPPA's aforementioned proposal was considered by the Authority but found not to be maintainable due to the fact that ZEPL has revised its feasibility for its total enhanced capacity of 56.4 MW which has been approved by the Panel of Experts of Alternate Energy Development Board where CPPA is also represented. In the opinion of the Authority, CPPA should have raised this matter with AEDB at the time of approval of ZEPL's revised feasibility. Further AEDB has revised LOI for ZEPL for its total wind farm capacity of 56.4 MW, based on which the Authority has already modified ZEPL's Generation License incorporating its complex capacity of 56.4 MW vide its decision dated May 06, 2011.

7.8 The Authority considers that in the instant tariff petition if the Authority takes the position to strictly stick to its previous determination dated May 23, 2008 and rejects out rightly ZEPL's request for increase in its project cost due to change of equipment, when ZEPL has already invested substantial amount of money out of its own resources for completion of Phase-I (6 MW) and has already made upfront payment to its equipment suppliers for Phase-II, then this would definitely lead to project being scrapped by ZEPL, which obviously will not be taken favorably by the potential wind power investors as well as the financing/lending institutions nor it would be in the interest of the consumers who are facing acute load shedding due to the current power crises in the country. It is therefore, prudent for the development of wind power sector in the country to recognize difficulties of the investors/IPPs in view of the country's present economic situation as well as security concerns of the foreign investors with an even handed approach so that the wind sector which is still in its infancy stage, is developed and wind power potential available in the country is harnessed to the maximum for the benefit of a common consumer. The Authority is cognizant of the fact that it has already accepted and allowed change in equipment (technology) along with revision in project cost to other wind power IPP i.e. Dawood Power (formerly Win Power) who filed its petition twice pursuant to change of equipment supplier from Nordex Germany to Goldwind China along with revised project costs.

7.9 The Authority has, therefore, decided to consider ZEPL's instant request for approval of tariff for its 56.4 MW enhanced capacity wind power plant on merit and allow justified increase in EPC and other cost components on the basis of available information while taking in to account the revised total enhanced capacity of 56.4 MW.

8. Net Annual Energy Production

8.1 ZEPL in its initial submission provided net estimated annual energy production of 167.659 GWh at a confidence level of P50 and at average annual wind speed of 7.7 m/sec which was based on three years wind speed data received from its own mast installed at site in 2007. During the hearing, the representatives of ZEPL asserted that the data from their own wind masts was very reliable since these masts are located at site of the Zorlu wind farm and therefore, it is more logical to calculate annual benchmark energy

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

production estimates based on data from these masts. The Authority, in the hearing of the petition however, observed that AEDB has already approved average annual benchmark wind speed of 7.3 m/sec at 80 meters height for the Jhampir area. The representative of AEDB present at the hearing acknowledged the Authority's statement and submitted that wind power projects located at Jhampir wind corridor are required to work out their annual benchmark energy production based on the average annual benchmark wind speed of 7.3 m/sec, which is the minimum wind speed guaranteed by the Government of Pakistan under its "Policy for Development of Renewable Energy for Power Generation 2006", and the same shall be used for the purpose of calculating wind risk payable to the wind power IPPs.

8.2 The Authority in the case of other wind power IPPs has considered net annual production based on recommendations of AEDB as verified through a study carried out by its Independent Consultant Risoe National Laboratory Denmark. As per the previous practice AEDB vide its letter B/3/1/ZEPL/07 dated January 18, 2011 has verified two figures i.e. 157.7 GWh and 167.1 GWh as the estimated net annual energy production at ZEPL wind farm site based on recommendations of its consultant i.e. Risoe National laboratory Denmark..The former is based on data from the Nooriabad wind mast installed at about 15 Km away from Zorlu's project site and the latter on Zorlu wind mast installed at site both calculated at an average annual wind speed of 7.3 m/sec. AEDB in its recommendations has mentioned that the annual energy production estimated by its consultant are lower bound and NEPRA should not allow ZEPL any number below the verified production.

8.3 ZEPL was, therefore, directed vide our letter dated April 28, 2011 and subsequent letter dated May 12, 2011, to provide its annual energy production based on benchmark wind speed of 7.3 m/sec, including a table showing monthly energy production based on AEDB's monthly approved benchmark wind speed and complex energy production table based on cut-in to cut-out wind speed as per equipment manufacturers power curves, for consideration and approval of the Authority. The Petitioner vide its letter No. ZEPL/NEPRA/TARIFF/06-03 dated May 17, 2011 has provided the requisite information whereby it has estimated net annual energy production of 159.010 GWh based on benchmark annual wind speed of 7.3 m/sec. The net energy production now proposed by ZEPL at average annual wind speed of 7.3 m/.sec is the same as provided in its feasibility already approved by the AEDB.

8.4 The revised net annual energy production of 159.010 GWh as proposed by ZEPL at annual average benchmark wind speed of 7.3 m/sec using the Nooriabad data is slightly higher than the AEDB's verified figure of 157.570 GWh based on the same wind speed and Nooriabad wind mast data. The Authority in the case of FFC Energy Limited (FFCEL) has approved higher net annual energy production (143.6 GWh) based on the Petitioner's demand, over the AEDB's minimum recommended figure of 135.200 GWh. On similar lines, the net annual energy production of 159.010 GWh in the case of ZEPL being more than the AEDB's minimum recommended figure of 157.570 GWh is considered to be reasonable hence approved as per demand of ZEPL.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

9. Project Construction Period

9.1 ZEPL, in its petition has not specifically indicated its project construction period. However, as per its financing terms agreed with its lenders a grace period of 24 months has been indicated in its petition. The matter was discussed in the hearing of the petition whereby it was submitted by the petitioner that it has proposed a tentative period of two years but it will make all efforts to complete its project within a period of 14-18 months after the financial close.

9.2 The petitioner has submitted that its EPC contractors have already been mobilized at site. ZEPL has already completed installation of 5 turbines in 2009 and its new turbines from Vestas will be delivered during this summer. In view of this the time required to complete its project should be comparatively less. As per the terms of ZEPL's proposed EPA with the power purchaser, a project construction period of 17 months after the financial closing date has been indicated. Its EPA at this stage is however not final and signed as yet. Nevertheless the Authority considers that the ZEPL should complete its project expeditiously but not exceeding 17 months starting from the date of its financial close. The Authority also considers that construction period for its Phase-I (6 MW) should be agreed judiciously and commensurate with its size, in the Energy Purchase Agreement to be signed between the CPPA and ZEPL.

10. EPC Cost

10.1 ZEPL has estimated EPC cost of US$ 138.800 million for its 56.4 MW capacity wind farm (US$ 2.461 million per MW) with the following main cost components.

EPC Cost	(US$ Million)
EPC Cost for Phase-I (6 MW)	22.876
Turbine Supply Contract (Vestas)	64.902
Balance of Plant Contract (BoP)	51.022
Total	**138.800**

10.2 In support of its claim ZEPL submitted copies of separate contracts for supply of equipment with Vestas and for the Balance of Plant (BoP) with Zorlu Industrial Pakistan Limited (ZIPL). ZEPL has claimed US$ 22.876 million for Phase-I, which according to ZEPL, has already been completed in the mid of 2009 comprising 5 Vensys turbines of 1.2 MW each at 69 meters height and US$ 115.924 million for Phase-II comprising 28 Vestas V90 wind turbines of 1.8 MW each (50.4 MW capacity).

10.3 CPPA in its comments submitted that the Authority had earlier approved ZEPL's EPC cost of US$ 112.205 million for its 49.5 MW wind power plant. Accordingly, EPC cost component for Phase-I should be equivalent to US$ 14.00 million approximately as against its claim of US$ 22.876 million. CPPA submitted that ZEPL's claimed EPC cost for its Phase-I is about 60% more on prorate basis from the previously approved EPC cost of US$ 112.205 million for its whole complex capacity of 49.5 MW, whereas it has

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

not provided any cogent reasons and cost breakup of this huge increase in the already accomplished work of its phase-I.

10.4 The Federation of Pakistan Chambers of Commerce & Industry (FPCCI) and Mr. Akhtar Ali, a consultant representing Proplan Associates, in their comments pointed out that the current wind turbine prices in the international market have come down by 20%-25% from the prevailing level of wind equipment prices in 2008. Both the commentators suggested that the Authority should revisit all awarded tariffs, reflecting the new cost/price realities for the projects for which supply agreements have not yet been signed.

10.5 The comments offered by FPCCI and Mr. Akhtar Ali do not specifically suggest the current prices levels of equipment relevant to our country which also involve transportation costs from the country of origin. The commentators have rather relied on general perception of lower prices of wind energy equipment and tariff levels in the international/European markets, which may not be exactly applicable to our country where all the energy equipment has to be imported from other countries along with additional expenditure on transportation, custom clearance etc. Therefore, the prices of energy equipment offered for our country, considering the lack of any previous track record of wind turbines performance and credible wind data, along with country's current economic and security situation may not be exactly comparable to the developed wind energy markets. Further, the Authority considers EPC cost of IPPs on the basis of firm price EPC contracts negotiated with the EPC contractors in accordance with the GoP tariff guidelines.

10.6 For a reasonable assessment of ZEPL's EPC cost, the Authority has decided that ZEPL's total EPC cost should be dealt separately for its Phase-I and Phase-II. Since, ZEPL has already completed installation of its Phase-I comprising 6 MW capacity (5 Vensys WTGs 1.2 MW each), therefore, the EPC cost for its Phase-I is required to be assessed on prorate basis in view of the earlier determination of the Authority issued on May 23, 2008.

10.7 For Phase-II comprising 50.4 MW capacity, ZEPL has provided copies of Equipment Supply Contract and Balance of Plant Contract which together cover the cost of all plant and equipment, civil & electrical works, including project supervision, erection, testing and commissioning. ZEPL has signed the Equipment supply contract with VESTAS at a fixed price of Euros 46.080 million (US$ 64.240 million) for supply of 28 V90 1.8 MW each (total 50.4 MW for its Phase-II), which includes Euros 716,740 for payment of supervision and technical support to be provided by the equipment supplier during the project construction period. Further, it has included US$ 0.662 million in the cost of energy equipment on account of Sindh Infrastructure Development Surcharge estimated at a rate of 0.85% of the Turbine Supply costs, which however will be adjusted on the basis of actual payment by ZEPL on this account at the time of COD. ZEPL has sought one-time adjustment at COD for the equipment cost due to Euro/USD exchange rate variation over the reference Euro/USD parity of 1.3941.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

10.8 ZEPL has also entered into a Balance of Plant Contract with Zorlu Industrial Pakistan Ltd at a lump sum price of US$ 51.022 million. The breakup of ZEPL's EPC cost for its Phase-II is given hereunder.

EPC Cost	Euro Million	USD Million
Equipment Supply Contract	46.080	64.240
Balance of Plant Contract		51.022
Sindh infrastructure development surcharge		0.662
Total	**46.080**	**115.924**

10.9 The price of energy Equipment (Wind turbines) as per the contract is ex-Factory based and packing, shipping, transportation from manufacturer's site to the project site including payment of duties and taxes is responsibility of the BoP Contractor. The scope of works for the Balance of Plant Contract includes procurement of all equipment (other than wind turbines), spares, transportation, custom clearance, duties and taxes, civil works electrical and mechanical works erection supervision, testing and commissioning of the wind farm complex.

10.10 ZEPL's claimed EPC cost of US$ 115.924 million for its Phase-II (50.4 MW) is higher as compared to approved EPC cost for other wind power IPPs. When compared with the latest approved EPC cost of FFCEL, EPC Cost of ZEPL for its Phase-II is higher by US$ 2.782 million. ZEPL was asked to explain the reasons for its higher negotiated price of EPC for its Phase-II. According to the Petitioner, its EPC cost is based on European equipment VESTAS Spain/Denmark which is comparatively expensive as compared to the Chinese equipment because of its superior technology in terms of durability, reliability and better performance. The Authority observed that the EPC cost allowed to other IPPs including FFCEL was based on Chinese equipment. The Authority also noted the fact that transportation cost of the energy equipment from its European based manufacturer's facility to the project site in the case of ZEPL would be comparatively higher.

10.11 The Authority further observed that ZEPL's higher EPC cost for its Phase-II is required to be reflected in terms of more energy out-put on per annum basis, given better efficiency, performance and reliability of VESTAS energy equipment. ZEPL, in its support provided a copy of third party certification from DET NORSKE VERITAS certifying ZEPL's proposed VESTAS energy equipment for performance under extreme temperatures in the range of -30 °C to +50 °C. The Authority observed that ZEPL with this energy equipment (Vestas) is expected to produce more than its annual benchmark energy, for which it will get paid at 10% of the approved tariff ultimately resulting in lower overall per unit rate to the power purchaser. The Authority considers that the higher EPC cost of ZEPL for its Phase-II would be offset against better performance of its wind turbines under local conditions which according to the third party certification, are more suitable for this kind of equipment. In view of the aforementioned, the Authority has decided to accept US$ 115.924 million as EPC cost for ZEPL's Phase-II.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

10.12 For the EPC Cost of its Phase-I comprising 5 WTGs of 6 MW total capacity, ZEPL has claimed US$ 22.876 million. According to the information provided by ZEPL it has completed all works for the Phase-I. The following breakup of Phase-I EPC Cost has been provided by ZEPL.

EPC Cost Phase-I	**US$ Million**
Ground Survey	0.079
Engineering & Design	0.073
WTG Supply	12.336
Spare Parts	0.563
Civil Works	4.805
Crane Rental	2.222
Erection Works	0.337
Supervision	0.237
Electrical Equipment Supply	0.186
Electrical Works	0.116
Transportation Costs (WTG)	1.224
Custom Clearance	0.699
Total	**22.876**
Per MW	**3.813**

10.13 ZEPL was asked to provide complete documentary evidence i.e. actual invoices, bank statements, bills of lading and other supporting documents along with full justification of its Phase-I EPC cost for verification. In response ZEPL has provided a certificate from a Chartered Accountant firm certifying that the above mentioned expenditure has already been incurred by ZEPL in different currencies such as Euro, PKR and USD. ZEPL through its later communication also provided actual details of expenditure along with documentary evidence as per above requirement of the Authority.

10.14 The Authority in its previous determination dated May 23, 2008 had allowed EPC cost of US$ 112.205 million for its 49.5 MW capacity wind power plant. ZEPL has been able to install only 6 MW capacity comprising 5 Vensys turbines of 1.2 MW each, while it could not complete its total project capacity of 49.5 MW due to problems with its previous Chinese equipment manufacturer (Goldwind). According to ZEPL, its claim of US$ 22.876 million (US$ 3.813 million per MW) covers all EPC cost pertaining to its Phase-I on actual basis, which is considered to be substantially on the higher side and therefore can not be accepted as such. The Authority considers that the EPC cost for Phase-I needs to be considered on prorate basis in light of its already approved EPC cost for its 49.5 MW project as per the previous Authority's determination for ZEPL dated May 23, 2008. Accordingly the Authority has assessed US$ 13.889 million on account of Phase-I EPC cost as per the following cost breakup:

10.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

EPC Cost Phase-I	**Amount US$ Million**
Energy equipment (5 Vensys turbines with blades, towers and 5 transformers)	11.809
Transportation cost	1.196
Civil works	0.589
Electrical works	0.202
Project management & supervision	0.070
Engineering & design	0.023
Total	**13.889**

10.15 Pending final adjustment of ZEPL's Phase-I EPC cost along with adjustment of EPC cost of its Phase-II upon completion of its whole complex of 56.4 MW capacity at COD, the EPC cost for Phase-I comprising 6 MW capacity already installed by ZEPL as assessed above US$ 13.889 million based on allocation of total EPC cost already allowed to ZEPL vide Authority determination dated May 23, 2008 is quite just and fair and, therefore, approved by the Authority.

10.16 In view of the above, the total EPC cost for Phase-I and Phase-II allowed to ZEPL works out to be US$ 129.813 million for its 56.4 MW capacity, which will be adjusted at the time of COD for variations in the relevant currency exchange rate prevailing on actual date of transaction during the project construction period upon provision of proper relevant documentary evidence, over the reference numbers for Phase-I and Phase-II as provided hereunder..

Adjustment of Phase-I EPC Cost

- Energy Equipment price of Euros 8.316 million (US$ 11.809) which includes the cost of 5 Vensys 1.2 MW turbines each, blades, towers and 5 transformers, will be adjusted at COD on account of actual variation in the Euro/US$ and PKR/US$ exchange rate variation during the construction period over the reference Euro/USD parity of 1.42 and PKR/US$ exchange rate of Rs 61.00.

- Transportation cost of Euro 0.842 million (equivalent US$ 1.196 million) will be adjusted at COD on account of actual variation in the Euro/US$ and PKR/US$ exchange rate variation during the construction period over the reference Euro/US$ exchange rate parity of 1.42 and PKR/US$ exchange rate of Rs. 61.00, upon production of relevant documentary evidence.

- Other EPC cost components if paid in US$ will be adjusted at COD on the basis of actual PKR/USD exchange rate variation over the reference PKR/US$ exchange rate of Rs. 61.00, upon production of relevant documentary evidence.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

Adjustment of Phase-II EPC Cost

- Energy Equipment price of Euro 46.080 million (equivalent US$ 64.240 million) will be adjusted at COD on account of actual variation in the Euro/US$ parity and PKR/US$ exchange rate variation during the project construction period, over the reference Euro/US$ parity of 1.3941 and PKR/US$ exchange rate of Rs. 85.0553.

- Balance of Plant contract price of US$ 51.022 million, if paid in US$, will be adjusted at COD, on account of actual variation in the PKR/US$ exchange rate during the project construction period over the reference PKR/US$ exchange rate of Rs. 85.0553.

- Sindh infrastructure development surcharge US$ 0.662 million will be adjusted on the basis of actual at the time of COD.

11. Non-EPC Cost

11.1 ZEPL has claimed US$ 23.079 million on account of Non-EPC cost for its 56.4 MW wind farm. The following breakup of Non-EPC cost has been provided by ZEPL.

Non-EPC Cost	US$ Million
Project Development Cost	6.161
Insurance During Construction	1.874
Other Project Costs	5.762
Financial Charges	3.759
Sub-Total	**17.556**
Cost Per MW	**0.311**
Interest During Construction	5.524
Total	**23.079**

11.2 The Non-EPC cost claimed by ZEPL is significantly on the higher side as compared to the same cost already approved by the Authority for other wind power IPPs. ZEPL in its petition has estimated its Non-EPC cost on combined basis for its Phase-I and Phase-II. The Authority considers that its Non-EPC cost for Phase-I needs to be considered on prorate basis in view of its approved Non-EPC cost for each component as per determination of Authority dated May 23, 2008, while Non-EPC cost for its Phase-II 50.4 MW capacity needs to be considered separately in comparison with other IPPs.

11.3 The Non- EPC cost of ZEPL under each head/project activity is further discussed as hereunder:

Project Development Cost

11.4 According to the information provided by ZEPL, this cost component covers the cost of developing and managing the project since obtaining the initial LOI in June 2006 including the cost of environmental, financial, technical and legal consultants of ZEPL,

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

administration cost of the company and cost of various permits, fees and licenses. This component also includes project development costs to be incurred by ZEPL till COD of its 56.4 MW wind power plant. The following breakup has been provided by ZEPL

Project Development Cost	**US$ Million**
Project Consultants cost	3.732
Administration during construction	1.852
Licenses & other fees	0.152
Operating Fixed Assets	0.425
Total	**6.161**

11.5 The Authority had already determined Project Development cost of US$ 1.773 million for ZEPL in its previous determination dated May 23, 2008. Therefore, project development cost attributed to its Phase-I works out to be US$ 0.215 million. However for its Phase-II comprising 50.4 MW capacity its project development cost needs to be assessed afresh in light of the same cost allowed to other wind power IPPs. The Authority has already approved US$ 3.873 million in its latest determination for FFCEL, therefore the same is being allowed to ZEPL for its Phase-II.

11.6 In view of the above the total project development cost for ZEPL calculates to US$ 4.088 million and, therefore, is allowed to ZEPL.

Insurance During Construction

11.7 ZEPL claimed US$ 1.874 million on account of Insurance expense during the project construction, which is 1.35% of its claimed total EPC cost of US$ 138.800 million. Insurance cost for Phase-I based on previous determination of the Authority works out to US$ 0.172 million on prorate basis, while for Phase-II, based on its approved EPC cost works out to be US$ 1.565 million. The total cost of Insurance during the construction period assessed for ZEPL works out to be US$ 1.737 million and therefore, is approved. ZEPL will be entitled for adjustment of insurance cost during construction period at the time of COD based on actual subject to the maximum of 1.35% of the adjusted aggregate EPC cost i.e. both for Phase-I and Phase-II on provision of authentic documentary evidence to the satisfaction of the Authority.

Other Project Costs

11.8 ZEPL has claimed US$ 5.762 million under the head of other project costs. According to the information provided by ZEPL this component covers the cost of initial working capital to bridge the gap between company's cash inflows and outflows, general expenses for Phase-I, office expenses of head office and site office such as messing, housekeeping, water supply, security etc. from commencement of the project construction till today. Further, cost of spare parts for initial inventory of Phase-I have also been included under this head. The following breakup of other project costs has been provided by the Petitioner.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Other Project Costs	US$ Million
Already incurred General Expenses (Pakistan)	1.128
Already incurred General expenses (Central)	0.135
Already incurred Insurance Costs (Phase-I)	0.452
Future general Expenses (Pakistan)	0.604
Future general expenses (Central)	0.070
Initial Working capital	3.287
LoC on Financial Closing	0.086
Total	**5.762**

11.9 ZEPL has included all general expenses pertaining to Phase-I of the project since commencement of works on site in 2007 till to-date. The Phase-I of ZEPL came in to operation in mid 2009. It has been selling energy production from its 6MW capacity Phase-I to HESCO at a mutually agreed rate. Further development of its whole complex of 49.5 MW has been delayed due to problems with its equipment suppliers and non provision of financing by its lenders (Standard Chartered Bank). The cost incurred by the company on account of delay in completion of project, however, can not be passed on to the power purchaser or end consumers.

11.10 ZEPL has claimed US$ 3.287 million on account of cost of financing to be arranged by ZEPL after the COD to meet its working capital requirement due to the time gap between actual payments and revenue receipts from the power purchaser. ZEPL has claimed financing cost of its working capital requirement under the Other Project Costs, which is not justified as it does not relate to the Pre-COD cost of the project. Further, the Authority has not allowed the cost of working capital to any other wind power IPP. In line with decision of the Authority for other such IPPs, the Authority has decided to disallow the cost of working capital to ZEPL.

11.11 The other cost claimed by ZEPL on account of general expenses, office expenses, travelling, company overheads, salaries and wages of company staff etc. for Phase-I and Phase-II has already been assessed in the preceding paragraphs under the head of Project Development Costs, hence can not be considered here again. However some cost associated with the construction of camp office at site, Letter of Credit (LoC) charges and future cost of travelling of the head office personnel as requested by ZEPL under general expenses which have not been specifically considered in the preceding paragraphs, have been assessed as US$ 0.500 million and, therefore, allowed to ZEPL under the head of other project costs..

Financial Charges

11.12 ZEPL has proposed US$ 3.759 million on account of financial charges which is about 3.52% of its requested amount of debt. According to ZEPL these charges consist of lender's structuring fees such as commitment fee at the rate of 0.75% per annum of the undisbursed amount of debt and upfront fee at a rate of 1.5% of the total debt. Further, this cost component also covers the cost of Lender's consultants to be paid by the

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

company such as International & local legal counsels, technical advisors, insurance advisor and financial advisors.

11.13 ZEPL has further stated that since these charges have been estimated on anticipated debt amount and drawdown schedule which may change as per the actual amount of debt and draw down schedule upon finalization of term sheet with the lenders. It has, therefore, requested that one-time adjustment/true up as per actual at COD may be allowed.

11.14 The Authority has already set a benchmark of 3% of the total loan amount (excluding interest during construction and financial charges) for the financial charges in its previous determinations of IPPs. On the basis of same principle the amount to be allowed to ZEPL on account of financial charges works to be US$ 2.859 million and, therefore, is approved. This cost component will be adjusted at COD on the basis of actual subject to the maximum of 3% of the actual amount of debt allowed by the Authority (excluding the impact of interest during construction and financial charges).

Interest During Construction (IDC)

11.15 ZEPL has estimated US$ 5.524 million on account of IDC for the project based on 18 months construction period. On the basis of assessed amount of project debt, the IDC component works out to be US$ 4.743 million. This is an estimated figure and will be adjusted at COD on the basis of actual debt composition, debt drawdown (not exceeding the amount) PKR/US$ exchange rate variation for foreign loan denominated in US$ and LIBOR/KIBOR interest rates, during the project construction period.

12. Based on discussion in the preceding paragraphs, the total project cost approved for ZEPL calculates to US$ 143.740 million as per the following breakup.

Project Cost	**US$ Million**
EPC Cost	129.813
Project Development Cost	4.088
Insurance during construction	1.737
Other Project cost	0.500
Financial Charges	2.859
Sub-Total	**138.997**
Interest During Construction	4.743
Total	**143.740**

13. **Debt Service**

13.1 ZEPL has submitted that 70% of its total project cost will be financed from loans, 60% of its project cost will be financed in foreign currency (USD) to be arranged from financial institutions such as IFC, ADB and Eco Trade & Development Bank at LIBOR plus 4.5% premium, while remaining 10% will be arranged in local currency at KIBOR plus 3% premium from Habib Bank Ltd. The repayment term will be 10 years after COD

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

with 2 years grace period. Debt will be repaid in 20 equal semi-annual installments. The petitioner has proposed adjustment of LIBOR/KIBOR and variation in PKR/US$ over the reference numbers for debt servicing compon ent on the basis of actual amount and composition of debt at the time of financial close.

13.2 The proposed terms of debt structure are within the limits recently approved by the Authority in case of other IPPs and, therefore, accepted. Regarding adjustment of debt servicing component, the Authority has approved such adjustments at the time of COD for all other IPPs. In line with other IPPs the debt service component of tariff of ZEPL will be adjusted at the time of COD. However, after the COD, the debt service component of tariff will be adjusted on semi-annual basis based on variation in the LIBOR/KIBOR rates as well as PKR/US$ exchange rate variations (for foreign debt only) in accordance with the mechanism prescribed in the order of the Authority.

13.3 In addition to the above, ZEPL has requested for a separate tariff component of Rs. 0.1405/kWh on account of L/C charges to be opened in favour of the lenders in lieu of Debt Service Reserve Account as per demand of its foreign lenders. ZEPL has not given any justification or rationale for this condition of its lenders anywhere in its Petition. However, it has been revealed from other details and supporting documents provided by ZEPL that Zorlu group of Turkey will provide a guarantee to its lenders through opening of L/C equivalent to one year's debt service amount to cover the risk of any default on account of debt servicing payment to its lenders. ZEPL has, therefore, claimed L/C charges of Rs. 23.562 million per annum to be paid during the debt servicing period of 10 years after COD.

13.4 The Authority considers that the risk of payment default is already amply covered under the provisions of Implementation Agreement (IA) and the Power Purchase Agreement to be signed by ZEPL with the Power Purchaser/GoP and, therefore, any additional financial burden on this account to be passed on to the power purchaser and ultimate consumer through tariff is not justified. The Authority has not allowed the cost of Debt Service Maintenance reserve account to any other IPP. In order to be consistent with its earlier decisions, the Authority does not accept ZEPL's request for a provision of DSRA L/C cost in the tariff.

14. Return on Equity

14.1 ZEPL has proposed 17% return on equity (IRR) based on 30% equity investment in the project as already allowed to other such projects. The request of the petitioner is in line with other wind power IPPs and, therefore, accepted. Accordingly ZEPL is allowed 17% return on equity based on 30% equity investment in the project for 20 years project life on BOO basis.

14.2 Since the actual timing and the amount of equity injection during the project construction period is not known at this stage, therefore, ZEPL has been allowed 17% return on equity without any return on equity during the project construction period (ROEDC) for the 20 years operational period in line with the same as allowed to other

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

such IPPs. ZEPL will be allowed ROEDC component of tariff at COD based on actual timing of equity investment during the permissible project construction period as discussed in detail in the preceding part of the determination.

15. O&M Cost

15.1 ZEPL submitted that the operation and maintenance function of the project will be handled by Zorlu O&M Pakistan Limited, through an O&M contract which is still to be finalized between the parties. According to the information provided by ZEPL, the total O&M cost of the Project consists of Fixed O&M Foreign component, Fixed O&M Local component, Variable O&M and Insurance Component. The details of these costs as per the Petitioner's claim are given herein below:

O&M Costs	Years 1-2 US$ Million	Years 3-10 US$ Million	Years 11-20 US$ Million
Fixed O&M Foreign	2.392	1.702	1.794
Fixed O&M Local	0.922	0.922	0.949
Variable O&M	0.120	0.085	0.090
Insurance	1.388	1.388	1.388
Total O&M costs	**4.822**	**4.097**	**4.221**
O&M Costs without Insurance	**3.434**	**2.709**	**2.833**

ZEPL has provided further details of these cost components as discussed hereunder

Fixed O&M –Foreign

15.2 The fixed O&M cost foreign component consists of technical support to be provided by the equipment manufacturer (Vestas) for the first two years and fees payable to the O&M contractor (Zorlu O&M) for operation of the power plant. ZEPL has divided its O&M cost per annum in three different tiers covering the entire period of 20 years of project life. After expiry of initial two years of the warranty period, the entire O&M function will be handled by the O&M Contractor who will be responsible for operation, maintenance and repair and replacement of parts during the entire life of the project. ZEPL has claimed higher O&M cost for the last ten years of plant operation while stating that as the plant grows older, the wear and tear of wind turbines is likely to increase due to which the per annum O&M cost of the power plant will also increase in the last ten years of project life.

15.3 According to the terms of the equipment supply contract with Vestas, the power plant is under warranty period for the first two years of operation and the risk and cost of any technical defect or replacement of parts/spares lies with the equipment supplier. Therefore the O&M cost in the first two years of operations is considered to be comparatively quite low. ZEPL has claimed US$ 2.392 million as operator fee which is quite on the higher side as compared to FFCEL in which case the operator's fees payable to its equipment supplier for the first two years was US$ 0.622 million per annum.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

15.4 The Authority observed that the per annum O&M cost requested by ZEPL for its whole power complex of 56.4 MW is substantially on the higher side which is contrary to the fact that the energy equipment (Vestas) to be installed by ZEPL comprising 50.4 MW is known for its reliability and durability and better performance, thus requiring comparatively lower per annum O&M costs. The Authority, therefore, considers that its O&M cost per annum needs to be rationalized to a reasonable level in comparison with the O&M cost allowed to other such IPPs. Accordingly the Authority has decided to assess O&M cost for its phase-I based on its previous determination dated May 23, 2008 while its per annum O&M cost for Phase-II on comparable basis with such cost allowed to other IPPs.

15.5 In view of the aforementioned the Authority has assessed and approved the following per annum O&M cost for ZEPL as given hereunder.

O&M cost/annum	**Year 1-2 US$ Million**	**Year 3-20 US$ Million**
Fixed O&M- Local	0.8503	1.4460
Fixed O&M-Foreign	0.3872	0.6723
Variable O&M- Foreign	0.0082	0.0082
Total	**1.2457**	**2.1265**

Insurance Expense

15.6 ZEPL proposed US$ 1.388 million on account of annual insurance expense during the project operational period which is equivalent to 1% of its claimed EPC cost of US$ 138.801 million. ZEPL has requested that its insurance cost component of tariff may be indexed with PKR/US$ exchange rate variation as already allowed to other IPPs.

15.7 ZEPL's insurance cost component is required to be segregated in to Phase-I and Phase-II. Insurance expense for its phase-I (6 MW capacity already installed by ZEPL) works out US$ 0.089 million on prorate basis as per previous determination of the Authority dated May 23, 2008. However for its Phase-II comprising 50.4 MW, US$ 1.159 million have been assessed on the basis of 1% of its Phase-II EPC Cost. The total amount of insurance expense per annum assessed for ZEPL calculates to US$ 1.248 million, which is being allowed under this head. This component will be adjusted first at COD and then on annual basis in accordance with the mechanism given in the order of the Authority.

Carbon Credits

16. ZEPL requested that it should be allowed 100% allocation of revenue to be realized from Carbon Emission Reduction (CER) credits. Government of Pakistan Policy for Development of Renewable Energy for Power Generation 2006, provides a mechanism for sharing of CER revenues, whereby the total revenue receipts on this account, after nominal upfront deduction for the administrative cost of CER registration,

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

are to be shared equally between the Power Purchaser and the Power Producer. The Authority therefore decides that CER receipts will be shared between the Power Purchaser and the Power Producer in accordance with provisions of the aforementioned GoP Policy.

17. **Other issues**

17.1 In addition to the indexations/adjustments regarding PKR/US$ exchange rate, WPI and CPI indexations allowed under the GoP Policy for Renewables 2006 and also approved by the Authority in the case of all other IPPs, ZEPL has requested for adjustment of its some cost components based on different indices as discussed hereunder.

- US CPI Indexation: ZEPL has requested that its insurance cost component as well as ROE component of tariff should be indexed with US CPI since its equity investment and insurance is denominated in US dollars and therefore should be allowed the inflationary impact.

- Eurozone Harmonized Index of Consumer Price (HICF): ZEPL submitted that its foreign O&M cost will be denominated in Euros as the equipment manufacturers are based in Europe. ZEPL, therefore requested that its foreign O&M cost component should be adjusted quarterly for Eurozone inflation based on Harmonized Index of consumer Prices as published by the European Central Bank.

17.2 The Authority considers that the aforementioned request of ZEPL is not consistent with the Government of Pakistan Policy for Development of Renewable Energy for Power Generation 2006, guidelines issued by GOP from time to time and indexations already allowed by the Authority to other IPPs, hence can not be accepted.

Pre Commercial Date Sale of Energy

17.3 ZEPL has submitted that the Ministry of Water and Power vide its Office memorandum No. 7/166/2006-P-II dated July 30, 2009 has permitted new gas and residual fuel oil based power plants Pre-COD sale of electrical energy on tariff. ZEPL has, therefore, requested that since GoP has allowed Pre-COD sale of electric energy to the power purchaser at the determined tariff of NEPRA, therefore, ZEPL may also be allowed Pre-COD sale of electric energy to the power purchaser at the NEPRA approved tariff minus the debt servicing component mentioned therein.

17.4 The Authority in its previous determination for ZEPL dated May 23, 2008 at para 12, stated inter alia as hereunder;

> *"Having considered the aforesaid, the Authority was of the view that the sale of electricity prior to the COD, if required, be made pursuant to bilateral agreement*

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

on mutually agreed terms with the buyer and should not be linked with the signing of the PPA/IA".

17.5 Since, ZEPL has already been permitted to sell its electrical energy prior to achieving COD of its whole complex at a rate mutually acceptable to the power purchaser and ZEPL, which is therefore, maintained in the instant case as well.

Order:

18. Pursuant to Rule 6 of the NEPRA Licensing (Generation) Rules, 2000, Zorlu Enerji Pakistan Limited (ZEPL) is allowed to charge the following specified/approved tariff for delivery of electricity to CPPA of NTDC for procurement on behalf of Ex-WAPDA Distribution Companies:

Tariff Components	Year 1-2 RS/kWh	Year 3-10 Rs/kWh	Year 11-20 Rs/kWh	Indexation
Fixed O&M Local	0.4548	0.7735	0.7735	WPI
Fixed O&M Foreign	0.2071	0.3596	0.3596	PKR/US$, US CPI
Insurance	0.6679	0.6679	0.6679	PKR/US$
Debt Service	7.5185	7.5185	-	PKR/US$,LIBOR/KIBOR
Return on Equity	3.9213	3.9213	3.9213	PKR/US$
Variable O&M	0.0044	0.0044	0.0044	PKR/US$, US CPI
Total	12.7740	13.2452	5.7267	

i) The reference tariff has been calculated on the basis of net annual benchmark energy production of 159.010 GWh at annual net plant capacity factor of 32.18% for its total complex installed capacity of 56.4 MW

ii) The above charges will be limited to the extent of net annual energy production of 159.010 GWh. Any excess energy supplied to the Power Purchaser in a year, over the benchmark energy of 159.010 GWH will be charged at 10% of the prevalent approved tariff.

iii) In the above tariff no adjustment for Carbon Emission Reduction (CER) receipts, has been accounted for. However, upon actual realization of CERs, the same shall be distributed between the power purchaser and the Petitioner in accordance with the approved mechanism given in the GoP Policy for Development of Renewable Energy for Power Generation, 2006.

iv) The reference PKR/Dollar rate has been assumed at 85.0553.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

v) The above tariff is applicable for a period of twenty (20) years commencing from the Commercial Operation Date (COD).

vi) The monthly benchmark energy production table along with monthly complex power curve energy table is attached herewith as Annex-I, which should be verified by AEDB before finalization of Energy Purchase Agreement (EPA).

vii) ZEPL is entitled to payment of Wind Speed Risk by the Power Purchaser in accordance with the GoP Policy for Development of Renewable Energy for Power Generation 2006 and the mechanism approved by the Alternate Energy Development Board (AEDB).

viii) The component wise tariff is indicated at Annex-II.

ix) Debt Servicing Schedule is attached as Annex-III

The following indexations will be applicable to the reference tariff;

I. One Time Adjustment

a. The Principal repayment and the cost of debt will be adjusted at COD as per the actual borrowing composition.

b. Interest During Construction (IDC) will be adjusted at COD on the basis of actual debt composition, debt drawdown (not exceeding the amount allowed by the Authority),PKR/US$ exchange rate variation for foreign loan denominated in US$ and LIBOR/KIBOR interest rates, during the project construction period.

c. The specific items of project cost to be paid in foreign currency (i.e. Euro, US$) will be adjusted at COD on account of actual variation in exchange rates over the applicable reference exchange rates on production of verifiable documentary evidence by the Petitioner.

d. Sindh Infrastructure Development Surcharge will be adjusted as per actual over the reference amount of US$ 0.662 million at COD based on verifiable documentary evidence.

e. Insurance during construction will be adjusted at COD based on actual subject to the maximum of 1.35% of the adjusted and approved EPC cost upon production of verifiable documentary evidence.

f. Financial charges will be adjusted at COD based on actual subject to the maximum of 3% of the approved amount of debt excluding the impact of interest during construction and financial charges.

g. Return on Equity will be adjusted at COD in accordance with the GoP Policy for Development of Renewable Energy for Power Generation 2006, to ensure

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

17% IRR on equity while treating the project on Build-Own-Operate (BOO) basis.

h. The reference tariff table shall be revised at COD while taking into account the above adjustments. The Petitioner shall submit its request to the Authority within 15 days of COD for necessary adjustments in tariff.

II. Pass-Through Items

No provision for income tax has been accounted for in the tariff. If the Petitioner is obligated to pay any tax, the exact amount paid by the Petitioner shall be reimbursed by CPPA to the Petitioner on production of original receipts. This payment shall be considered as pass-through payment (as Rs./kWh) spread over a 12 months period in addition to fixed charges proposed in the Reference Tariff. Furthermore, in such a scenario, the Petitioner shall also submit to CPPA details of any tax shield savings and CPPA will deduct the amount of these savings from its payment to the Petitioner on account of taxation.

Withholding tax on dividend is also a pass through item just like other taxes as indicated in the government guidelines for determination of tariff for new IPPs. Withholding tax shall be paid @ 7.5% of the reference equity. CPPA (NTDC) shall make payment on account of withholding tax at the time of actual payment of dividend subject to maximum of 7.5% of 17% return on equity according to the following formula:

Withholding Tax Payable = $[\{17\% * (E_{(Ref)} - E_{(Red)})\} \times 7.5\%]$

Where:

$E_{(Ref)}$ = The reference amount of equity for the relevant year.

$E_{(Red)}$ = Equity Redeemed, if any

In case the Petitioner does not declare a dividend in a particular year or only declares a partial dividend, then the difference in the withholding tax amount (between what is paid in that year and the total entitlement as per the Net Return on Equity) would be carried forward and accumulated so that the Petitioner is able to recover the same as a pass through from the Power Purchaser in future on the basis of the total dividend pay out.

III. Indexations:

The following indexation shall be applicable to the reference tariff after COD;

i) Indexation applicable to O&M

The local part of O&M cost will be adjusted on account of Inflation (WPI) and O&M foreign will be adjusted on account of variation in Rupee/Dollar exchange rate and US CPI. Quarterly Adjustment for local inflation, foreign inflation and exchange rate variation will be made on 1st July, 1st October, 1st January & 1st

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

April respectively on the basis of average of the latest available information with respect to WPI (notified by the Federal Bureau of Statistics), US CPI (notified by US bureau of labor statistics) and revised TT & OD Selling rate of US Dollar as notified by the National Bank of Pakistan. The mode of indexation will be as follows:

$F\ O\&M_{(LREV)}$	=	$O\&M_{(LREF)} * WPI_{(REV)} / 215.17$
$F\ O\&M_{(FREV)}$	=	$O\&M_{(FREF)} * USCPI_{(REV)} / 223.467 * ER_{(REV)} / 85.0553$

Where:

$F\ O\&M_{(LREV)}$	=	The revised applicable Fixed O&M local component of the Fixed Charges indexed with WPI
$F\ O\&M_{(FREV)}$	=	The revised applicable Fixed O&M foreign component of the Fixed Charges indexed with US CPI and currency fluctuation
$O\&M_{(LREF)}$	=	The reference fixed O&M local component of the Fixed Charges for the relevant period.
$O\&M_{(FREF)}$	=	The reference fixed O&M foreign component of the Fixed Charges for the relevant period
$WPI_{(REV)}$	=	The Revised wholesale Price Index (Manufactures)
$WPI_{(REF)}$	=	215.17, Reference wholesale price index (manufactures) of March 2011 as notified by the Federal Bureau of Statistics
$US\ CPI_{(REV)}$	=	The Revised US Consumer Price Index (All Urban Consumers) notified by US Bureau of Labor Statistics.
$US\ CPI_{(REF)}$	=	223.467, Reference US CPI notified by the Bureau of Labor Statistics (All Urban Consumers) for the month of March 2011.
$ER_{(REV)}$	=	The Revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

$V\ O\&M_{(FREV)}$	=	$O\&M_{(FREF)} * USCPI_{(REV)} / 223.467 * ER_{(REV)} / 85.0553$

Where:

$V\ O\&M_{(FREV)}$	=	The revised applicable Variable O&M foreign component of the Variable Charges indexed with US CPI and currency fluctuation
$O\&M_{(FREF)}$	=	The reference Variable O&M foreign component of the Variable Charges for the relevant period.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

$USCPI_{(REV)}$	=	The Revised US Consumer Price Index (All Urban Consumers) notified by US Bureau of Labor Statistics.
$USCPI_{(REF)}$	=	223.467, Reference US CPI notified by the Bureau of Labor Statistics (All Urban Consumers) for the month of March 2011.
$ER_{(REV)}$	=	The Revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

ii) Adjustment for LIBOR/KIBOR variation

The interest part of fixed charge component will remain unchanged throughout the term except for the adjustment due to variation in the interest rate as a result of 6-monthly variation in LIBOR and KIBOR while spread (4.50%) on LIBOR and (3.00%) on KIBOR remaining the same according to the following formula:

For foreign financing

$$\Delta I = P_{(REV)} * (LIBOR_{(REV)} - 0.4615\%) / 2$$

For local financing

$$\Delta I = P_{(REV)} * (KIBOR_{(REV)} - 13.76\%) / 2$$

Where:

ΔI	=	The variation in interest charges applicable corresponding to variation in 6-month LIBOR & KIBOR. Δ I can be positive or negative depending upon whether $LIBOR_{(REV)}$/ $KIBOR_{(REV)}$ > or < 0.4615%/13.76% respectively. The interest payment obligation will be enhanced or reduced to the extent of Δ I for each six-monthly adjustment on the basis of applicable six-monthly LIBOR/KIBOR.
$P_{(REV)}$	=	Is the outstanding principal (as indicated in the attached debt service schedule to this order at Annex-III) on a bi-annual basis at the relevant six-monthly calculations date. Period 1 shall commence on the date on which the 1st installment is due after availing the grace period.

Note:

i) Foreign debt and its interest shall be adjusted on account of actual variation in PKR/US$ over the applicable reference PKR/US$ exchange on bi-annual basis.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

ii) In accordance with the GoP Policy for Development of Renewable Energy for Power Generation 2006, any saving on account of better negotiation of margin/premium over the reference 4.5% and 3.00% for the foreign and local financing respectively will be shared between the Power Purchaser and the Power Producer in ratio of 60:40.

iii) Return on Equity

The Return on Equity (ROE) component of tariff will be adjusted on the basis of revised TT & OD selling rate of US Dollar notified by the National Bank of Pakistan as per decision of the Economic Coordination Committee (ECC) according to the following formula;

$ROE_{(REV)} = ROE_{(REF)} \times ER_{(REV)} / ER_{(REF)}$

Where

$ROE_{(REV)}$	=	The revised ROE component of the tariff expressed in Rs/kWh
$ROE_{(REF)}$	=	The reference ROE component of the tariff expressed in Rs/kWh
$ER_{(REV)}$	=	The revised PKR/US$ exchange rate as notified by the National Bank of Pakistan
$ER_{(REF)}$	=	The reference PKR/US$ exchange rate (Rs. 85.0553)

iv) Insurance

In case of insurance to be procured in foreign currency i.e.US$, the insurance component of tariff shall be adjusted annually with exchange rate variation (PKR/US$) as per the following formula;

$Insurance_{(REV)} = I_{(REF)} * ER_{(REV)} / ER_{(REF)}$

Where,

$I_{(REF)}$	=	Relevant Reference Insurance component of tariff
$ER_{(REF)}$	=	Reference exchange rate PKR/US$.(Rs. 85.0553)
$ER_{(REV)}$	=	the revised TT & OD selling rate of PKR/US$ as notified by the National Bank of Pakistan.

IV. Adjustment on account of inflation, local inflation, US CPI, foreign exchange variation and LIBOR/KIBOR variation will be approved and announced by the Authority within fifteen working days after receipt of the Petitioner's request for adjustment in tariff in accordance with the requisite indexation mechanism stipulated herein.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

V. Terms and Conditions of Tariff:

Design & Manufacturing Standards:

Wind Turbine Generation system shall be designed, manufactured and tested in accordance with the latest IEC standards or other equivalent standards. All plant and equipment shall be new.

Wind Power Plant's Performance Data:

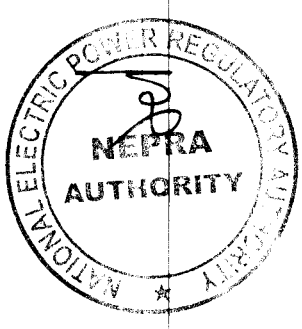
The Petitioner shall install monitoring masts with properly calibrated automatic computerized wind speed recording meters at the same height as that of the Wind Turbine Generators and a compatible Communication/SCADA system both at the Wind Farm and Power Purchaser's control room for transmission of wind speed and power output data to the Power Purchaser's control room..

Delivery Point:

The Petitioner shall deliver power at 132 kV at the door step of its wind farm. Up-gradation of generation voltage up to 132 kV will be the responsibility of the Petitioner.

Emissions Trading/ Carbon Credits:

The Petitioner shall process and obtain CER/carbon credits expeditiously and credit the proceeds to the Power Purchaser as per the policy issued by the Federal Government.



Annex - I

Table 1 – Benchmark Energy Production Table:

Month	m/s	Energy Yield
January	5.2	5,432.3
February	5.6	6,873.5
March	5.9	8,311.0
April	7.8	14,966.5
May	9.9	24,500.7
June	10.3	23,691.6
July	10.4	25,260.2
August	9.6	21,950.9
September	8	15,504.3
October	5.2	5,099.7
November	4.4	3,095.9
December	4.9	4,323.7
Sum	**7.3**	**159,010.2**

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

27

Table 2 – Monthly Complex Power Curves – Energy Production Estimates

Windspeed	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
m/s	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh
3	0,40	0,36	0,36	0,33	0,18	0,29	0,17	0,31	0,31	0,30	0,41	0,37
3,1	0,64	0,59	0,61	0,57	0,43	0,53	0,42	0,56	0,56	0,53	0,62	0,59
3,2	0,86	0,81	0,86	0,81	0,67	0,76	0,65	0,80	0,80	0,74	0,82	0,81
3,3	1,08	1,03	1,09	1,04	0,90	0,99	0,87	1,03	1,03	0,95	1,01	1,01
3,4	1,29	1,23	1,32	1,25	1,12	1,20	1,08	1,25	1,25	1,15	1,20	1,21
3,5	1,48	1,43	1,54	1,46	1,34	1,40	1,29	1,46	1,46	1,34	1,37	1,40
3,6	1,67	1,63	1,75	1,66	1,54	1,60	1,49	1,66	1,66	1,52	1,54	1,58
3,7	1,85	1,81	1,95	1,86	1,74	1,79	1,67	1,85	1,86	1,70	1,70	1,75
3,8	2,03	2,00	2,15	2,05	1,93	1,97	1,86	2,03	2,05	1,86	1,85	1,91
3,9	2,20	2,17	2,34	2,23	2,11	2,15	2,03	2,21	2,23	2,03	2,00	2,07
4	2,36	2,34	2,53	2,40	2,29	2,31	2,20	2,39	2,40	2,18	2,14	2,22
4,1	2,65	2,64	2,86	2,70	2,59	2,61	2,50	2,69	2,70	2,46	2,39	2,49
4,2	2,93	2,93	3,17	3,00	2,89	2,89	2,78	2,98	2,99	2,72	2,64	2,75
4,3	3,20	3,21	3,48	3,28	3,17	3,17	3,05	3,26	3,28	2,98	2,88	3,00
4,4	3,46	3,49	3,78	3,56	3,45	3,43	3,32	3,54	3,55	3,22	3,10	3,24
4,5	3,71	3,76	4,08	3,83	3,71	3,69	3,58	3,80	3,82	3,46	3,37	3,47
4,6	3,95	4,02	4,36	4,09	3,97	3,94	3,83	4,06	4,07	3,69	3,62	3,70
4,7	4,19	4,28	4,64	4,34	4,22	4,18	4,07	4,31	4,32	3,92	3,87	3,91
4,8	4,42	4,53	4,91	4,59	4,47	4,42	4,31	4,55	4,57	4,14	4,11	4,12
4,9	4,64	4,78	5,18	4,83	4,71	4,65	4,54	4,78	4,80	4,35	4,34	4,32
5	4,86	5,02	5,44	5,06	4,94	4,87	4,76	5,01	5,03	4,56	4,57	4,58
5,1	5,15	5,34	5,79	5,37	5,27	5,17	5,08	5,32	5,34	4,83	4,85	4,90
5,2	5,43	5,66	6,12	5,67	5,59	5,47	5,39	5,62	5,65	5,10	5,12	5,21
5,3	5,71	5,97	6,46	5,97	5,91	5,75	5,69	5,91	5,95	5,36	5,39	5,51
5,4	5,98	6,28	6,78	6,26	6,21	6,03	5,99	6,19	6,24	5,61	5,65	5,81
5,5	6,24	6,58	7,10	6,54	6,51	6,30	6,28	6,46	6,52	5,86	5,90	6,10
5,6	6,50	6,87	7,41	6,82	6,80	6,57	6,56	6,73	6,80	6,10	6,15	6,38
5,7	6,75	7,05	7,72	7,09	7,09	6,83	6,83	6,99	7,07	6,34	6,39	6,66
5,8	6,99	7,21	8,02	7,35	7,37	7,08	7,10	7,25	7,33	6,57	6,63	6,93
5,9	7,23	7,38	8,31	7,61	7,64	7,32	7,36	7,50	7,59	6,79	6,86	7,20

28

6	7,46	7,54	8,51	7,86	7,91	7,57	7,62	7,74	7,84	7,01	7,08	7,46
6,1	7,85	7,87	8,88	8,28	8,32	7,96	8,02	8,15	8,25	7,38	7,45	7,86
6,2	8,23	8,19	9,25	8,70	8,72	8,35	8,41	8,55	8,66	7,74	7,81	8,25
6,3	8,60	8,50	9,61	9,10	9,12	8,73	8,79	8,94	9,06	8,09	8,16	8,63
6,4	8,96	8,81	9,96	9,50	9,51	9,11	9,16	9,32	9,45	8,44	8,50	9,01
6,5	9,31	9,12	10,30	9,88	9,89	9,47	9,53	9,69	9,83	8,77	8,84	9,38
6,6	9,66	9,41	10,64	10,26	10,26	9,83	9,89	10,06	10,20	9,10	9,17	9,74
6,7	10,00	9,71	10,97	10,64	10,62	10,17	10,24	10,41	10,57	9,43	9,49	10,09
6,8	10,33	9,99	11,30	11,00	10,98	10,52	10,58	10,76	10,93	9,74	9,80	10,43
6,9	10,66	10,27	11,61	11,36	11,33	10,85	10,92	11,11	11,28	10,05	10,11	10,77
7	10,97	10,55	11,93	11,72	11,68	11,18	11,25	11,44	11,62	10,35	10,41	11,10
7,1	11,37	10,91	12,33	12,15	12,12	11,58	11,68	11,85	12,05	10,73	10,76	11,50
7,2	11,75	11,26	12,72	12,57	12,55	11,97	12,09	12,25	12,46	11,09	11,10	11,89
7,3	12,12	11,61	13,11	12,99	12,97	12,36	12,50	12,64	12,87	11,45	11,43	12,27
7,4	12,49	11,95	13,49	13,40	13,39	12,74	12,90	13,03	13,27	11,80	11,75	12,64
7,5	12,85	12,28	13,87	13,80	13,79	13,11	13,29	13,41	13,66	12,14	12,07	13,00
7,6	13,21	12,61	14,24	14,19	14,20	13,48	13,68	13,78	14,04	12,48	12,39	13,36
7,7	13,55	12,94	14,60	14,58	14,59	13,84	14,06	14,14	14,42	12,81	12,69	13,72
7,8	13,89	13,26	14,96	14,97	14,98	14,19	14,44	14,50	14,79	13,14	13,00	14,06
7,9	14,23	13,58	15,31	15,34	15,36	14,53	14,80	14,85	15,16	13,45	13,29	14,40
8	14,56	13,89	15,65	15,71	15,73	14,87	15,16	15,20	15,50	13,77	13,58	14,73
8,1	14,99	14,32	16,13	16,20	16,22	15,32	15,64	15,65	16,00	14,18	13,96	15,16
8,2	15,42	14,75	16,59	16,68	16,71	15,76	16,10	16,10	16,46	14,59	14,33	15,57
8,3	15,84	15,17	17,05	17,15	17,18	16,19	16,56	16,54	16,92	14,99	14,70	15,98
8,4	16,25	15,58	17,51	17,62	17,64	16,62	17,01	16,98	17,38	15,38	15,05	16,38
8,5	16,65	15,99	17,95	18,07	18,10	17,04	17,45	17,40	17,82	15,77	15,41	16,77
8,6	17,05	16,39	18,39	18,53	18,56	17,45	17,88	17,82	18,26	16,15	15,75	17,16
8,7	17,44	16,79	18,83	18,97	19,00	17,85	18,31	18,23	18,69	16,52	16,09	17,54
8,8	17,83	17,19	19,26	19,41	19,44	18,25	18,74	18,64	19,12	16,89	16,42	17,92
8,9	18,21	17,58	19,68	19,84	19,87	18,64	19,15	19,04	19,54	17,25	16,75	18,28
9	18,58	17,96	20,10	20,27	20,30	19,03	19,56	19,43	19,95	17,61	17,07	18,64
9,1	18,98	18,39	20,56	20,74	20,79	19,46	20,04	19,87	20,41	18,00	17,39	19,03
9,2	19,37	18,81	21,02	21,20	21,28	19,89	20,51	20,30	20,86	18,39	17,70	19,41
9,3	19,76	19,22	21,47	21,66	21,76	20,31	20,97	20,72	21,30	18,78	18,00	19,78

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

29

9,4	20,14	19,63	21,92	22,12	22,23	20,72	21,43	21,14	21,74	19,15	18,30	20,15
9,5	20,52	20,03	22,36	22,56	22,70	21,13	21,88	21,55	22,17	19,52	18,60	20,51
9,6	20,89	20,43	22,80	23,01	23,16	21,53	22,32	21,95	22,60	19,89	18,89	20,86
9,7	21,25	20,83	23,23	23,44	23,61	21,93	22,76	22,35	23,02	20,25	19,17	21,21
9,8	21,61	21,22	23,66	23,87	24,06	22,32	23,19	22,74	23,44	20,61	19,45	21,56
9,9	21,96	21,61	24,08	24,30	24,50	22,70	23,62	23,13	23,85	20,96	19,73	21,90
10	22,31	21,99	24,50	24,72	24,94	23,08	24,04	23,51	24,25	21,30	20,00	22,23
10,1	22,47	22,16	24,70	24,95	25,26	23,30	24,35	23,72	24,48	21,49	20,09	22,40
10,2	22,63	22,32	24,89	25,19	25,59	23,51	24,66	23,93	24,70	21,67	20,18	22,57
10,3	22,78	22,33	24,94	25,42	25,91	23,69	24,97	24,14	24,92	21,85	20,27	22,74
10,4	~~22,93~~	~~22,34~~	~~24,99~~	~~25,64~~	~~26,22~~	23,93	25,26	24,34	25,14	22,03	20,35	22,90
10,5	23,09	22,35	25,04	25,87	26,54	24,14	25,58	24,54	25,36	~~22,20~~	~~20,44~~	~~23,06~~
10,6	23,23	22,37	25,09	26,09	26,84	24,34	25,88	24,74	25,57	22,38	20,52	23,22
10,7	23,38	22,38	25,14	26,31	27,15	24,55	26,17	24,94	25,79	22,55	20,61	23,38
10,8	23,53	22,39	25,19	26,53	27,45	24,74	26,46	25,13	26,00	22,72	20,69	23,54
10,9	23,67	22,40	25,24	26,75	27,75	24,94	26,75	25,32	26,20	22,89	20,77	23,69
11	23,67	22,40	25,24	26,75	27,75	24,94	26,75	25,32	26,20	22,89	20,77	23,69
11,1	26,69	22,42	25,29	29,81	31,19	28,12	30,06	28,58	29,37	25,80	23,49	26,81
11,2	26,79	22,43	25,34	29,95	31,44	28,26	30,31	28,72	29,51	25,92	23,58	26,95
11,3	26,89	22,44	25,39	30,09	31,70	28,41	30,55	28,86	29,66	26,04	23,68	27,10
11,4	26,98	22,45	25,44	30,22	31,96	28,55	30,80	29,00	29,80	26,16	23,77	27,24
11,5	27,08	22,46	25,49	30,36	32,21	28,69	31,05	29,14	29,94	26,28	23,86	27,39
11,6	27,18	22,48	25,54	30,50	32,47	28,83	31,30	29,28	30,08	26,39	23,95	27,53
11,7	27,28	22,49	25,58	30,63	32,73	28,98	31,54	29,42	30,22	26,51	24,04	27,67
11,8	27,37	22,50	25,63	30,77	32,98	29,12	31,79	29,56	30,36	26,63	24,13	27,82
11,9	27,47	22,51	25,68	30,91	33,24	29,26	32,04	29,70	30,50	26,75	24,22	27,96
12	27,57	22,53	25,73	31,04	33,50	29,41	32,28	29,84	30,64	26,87	24,31	28,11
12,1	27,67	22,54	25,78	31,18	33,75	29,55	32,53	29,98	30,78	26,99	24,41	28,25
12,2	27,71	22,55	25,83	31,24	33,86	29,61	32,63	30,04	30,84	27,04	24,48	28,35
12,3	27,76	22,56	25,88	31,30	33,96	29,67	32,73	30,09	30,90	27,09	24,56	28,44
12,4	27,80	22,58	25,93	31,36	34,06	29,73	32,83	30,15	30,96	27,14	24,63	28,54
12,5	27,85	22,59	25,98	31,41	34,17	29,79	32,93	30,21	31,02	27,19	24,71	28,64
12,6	27,89	22,60	26,03	31,47	34,27	29,85	33,03	30,27	31,08	27,24	24,79	28,73
12,7	27,94	22,61	26,08	31,53	34,38	29,90	33,13	30,33	31,14	27,29	24,86	28,83

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

30

12,8	27,98	22,63	26,13	31,59	34,48	29,96	33,23	30,39	31,20	27,34	24,94	28,93
12,9	28,03	22,64	26,18	31,65	34,58	30,02	33,33	30,45	31,26	27,39	25,02	29,02
13	28,07	22,65	26,23	31,71	34,69	30,08	33,43	30,50	31,32	27,44	25,09	29,12
13,1	28,12	22,66	26,28	31,77	34,79	30,14	33,53	30,56	31,38	27,49	25,17	29,22
13,2	28,13	22,68	26,33	31,78	34,83	30,16	33,57	30,58	31,39	27,50	25,23	29,28
13,3	28,13	22,69	26,38	31,79	34,87	30,17	33,61	30,59	31,41	27,52	25,30	29,34
13,4	28,14	22,70	26,43	31,81	34,92	30,19	33,65	30,61	31,42	27,53	25,36	29,41
13,5	28,15	22,71	26,48	31,82	34,96	30,21	33,69	30,62	31,44	27,54	25,43	29,47
13,6	28,16	22,73	26,53	31,84	35,00	30,22	33,73	30,64	31,45	27,55	25,49	29,54
13,7	28,16	22,74	26,58	31,85	35,04	30,24	33,77	30,65	31,47	27,57	25,56	29,60
13,8	28,17	22,75	26,63	31,86	35,08	30,26	33,81	30,67	31,48	27,58	25,62	29,66
13,9	28,18	22,76	26,68	31,88	35,12	30,27	33,85	30,68	31,50	27,59	25,68	29,73
14	28,19	22,78	26,73	31,89	35,16	30,29	33,89	30,70	31,51	27,60	25,75	29,79
14,1	28,19	22,79	26,78	31,91	35,20	30,30	33,93	30,71	31,53	27,61	25,81	29,85
14,2	28,19	22,80	26,83	31,90	35,21	30,30	33,94	30,71	31,53	27,61	25,87	29,90
14,3	28,18	22,81	26,87	31,90	35,22	30,30	33,94	30,71	31,52	27,61	25,93	29,96
14,4	28,18	22,82	26,92	31,89	35,22	30,29	33,95	30,70	31,52	27,60	25,99	30,01
14,5	28,17	22,84	26,97	31,89	35,23	30,29	33,95	30,70	31,51	27,60	26,05	30,06
14,6	28,17	22,85	27,02	31,88	35,23	30,29	33,96	30,69	31,51	27,60	26,10	30,11
14,7	28,17	22,86	27,07	31,88	35,24	30,28	33,96	30,69	31,51	27,59	26,16	30,17
14,8	28,16	22,87	27,12	31,88	35,24	30,28	33,97	30,69	31,50	27,59	26,22	30,22
14,9	28,16	22,89	27,17	31,87	35,25	30,28	33,97	30,68	31,50	27,58	26,28	30,27
15	28,15	22,90	27,22	31,87	35,25	30,27	33,98	30,68	31,49	27,58	26,34	30,33

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Annex-II

ZORLU ENERJI PAKISTAN LTD
REFERENCE TARIFF

Year	Variable O&M Foreign	Fixed O&M Local	Fixed O&M Foreign	Insurance	Return on Equity	Withholding Tax @7.5%	Loan Repayment	Interest Charges	Total
	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh
1	0.0044	0.4548	0.2071	0.6679	3.9213	0.2941	3.9994	3.5191	13.0681
2	0.0044	0.4548	0.2071	0.6679	3.9213	0.2941	4.2421	3.2765	13.0681
3	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	4.5042	3.0143	13.5393
4	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	4.7881	2.7305	13.5393
5	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	5.0962	2.4223	13.5393
6	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	5.4317	2.0868	13.5393
7	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	5.7979	1.7206	13.5393
8	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	6.1988	1.3198	13.5393
9	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	6.6390	0.8796	13.5393
10	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	7.1238	0.3948	13.5393
11	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	-	-	6.0207
12	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	-	-	6.0207
13	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	-	-	6.0207
14	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	-	-	6.0207
15	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	-	-	6.0207
16	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	-	-	6.0207
17	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	-	-	6.0207
18	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	-	-	6.0207
19	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	-	-	6.0207
20	0.0044	0.7735	0.3596	0.6679	3.9213	0.2941	-	-	6.0207
Levelized Tariff	**0.0044**	**0.7085**	**0.3285**	**0.6679**	**3.9213**	**0.2941**	**3.6948**	**1.7317**	**11.3511**

The above rate is limited to annual benchmark energy production of 159.010 GWh. Any generated energy beyond 159.010 GWh in a year will be charged at 10% of the relevant latest Tariff for that year.

Exchange Rate Used= 1 US$ = Rupees 85.0553, Levelized tariff discounted at 10% per annum works out to be US cents 13.3456/kWh.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Annex-III

ZORLU ENERJI PAKISTAN LTD
Debt Servicing Schedule

Period	Foreign Debt					Local Debt					Annual Principal Repayment Rs./kWh	Annual Interest Rs./kWh	Annual Debt Service Rs./kWh
	Principal Million $	Repayment Million $	Mark-Up Million $	Balance Million $	Debt Service Millin $	Principal Million $	Repayment Million $	Mark-Up Million $	Balance Million $	Debt Service Millin $			
	86.2440	3.3828	2.1395	82.8612	5.5223	14.3740	0.3011	1.2045	14.0729	1.5057			
	82.8612	3.4667	2.0556	79.3946	5.5223	14.0729	0.3264	1.1793	13.7465	1.5057			
1	86.2440	6.8494	4.1951	79.3946	11.0445	14.3740	0.6275	2.3838	13.7465	3.0113	3.9994	3.5191	7.5185
	79.3946	3.5527	1.9696	75.8419	5.5223	13.7465	0.3537	1.1520	13.3928	1.5057			
	75.8419	3.6408	1.8814	72.2011	5.5223	13.3928	0.3833	1.1223	13.0095	1.5057			
2	79.3946	7.1935	3.8510	72.2011	11.0445	13.7465	0.7371	2.2743	13.0095	3.0113	4.2421	3.2765	7.5185
	72.2011	3.7311	1.7911	68.4700	5.5223	13.0095	0.4155	1.0902	12.5940	1.5057			
	68.4700	3.8237	1.6986	64.6463	5.5223	12.5940	0.4503	1.0554	12.1437	1.5057			
3	72.2011	7.5548	3.4897	64.6463	11.0445	13.0095	0.8658	2.1456	12.1437	3.0113	4.5042	3.0143	7.5185
	64.6463	3.9185	1.6037	60.7278	5.5223	12.1437	0.4880	1.0176	11.6557	1.5057			
	60.7278	4.0157	1.5065	56.7120	5.5223	11.6557	0.5289	0.9767	11.1268	1.5057			
4	64.6463	7.9343	3.1102	56.7120	11.0445	12.1437	1.0169	1.9944	11.1268	3.0113	4.7881	2.7305	7.5185
	56.7120	4.1154	1.4069	52.5967	5.5223	11.1268	0.5732	0.9324	10.5535	1.5057			
	52.5967	4.2175	1.3048	48.3792	5.5223	10.5535	0.6213	0.8844	9.9322	1.5057			
5	56.7120	8.3328	2.7117	48.3792	11.0445	11.1268	1.1945	1.8168	9.9322	3.0113	5.0962	2.4223	7.5185
	48.3792	4.3221	1.2002	44.0571	5.5223	9.9322	0.6733	0.8323	9.2589	1.5057			
	44.0571	4.4293	1.0929	39.6278	5.5223	9.2589	0.7298	0.7759	8.5291	1.5057			
6	48.3792	8.7514	2.2931	39.6278	11.0445	9.9322	1.4031	1.6082	8.5291	3.0113	5.4317	2.0868	7.5185
	39.6278	4.5392	0.9831	35.0886	5.5223	8.5291	0.7909	0.7147	7.7382	1.5057			
	35.0886	4.6518	0.8705	30.4368	5.5223	7.7382	0.8572	0.6485	6.8810	1.5057			
7	39.6278	9.1910	1.8535	30.4368	11.0445	8.5291	1.6481	1.3632	6.8810	3.0113	5.7979	1.7206	7.5185
	30.4368	4.7672	0.7551	25.6696	5.5223	6.8810	0.9290	0.5766	5.9520	1.5057			
	25.6696	4.8855	0.6368	20.7842	5.5223	5.9520	1.0069	0.4988	4.9451	1.5057			
8	30.4368	9.6526	1.3919	20.7842	11.0445	6.8810	1.9359	1.0754	4.9451	3.0113	6.1988	1.3198	7.5185
	20.7842	5.0066	0.5156	15.7776	5.5223	4.9451	1.0913	0.4144	3.8538	1.5057			
	15.7776	5.1308	0.3914	10.6467	5.5223	3.8538	1.1827	0.3229	2.6711	1.5057			
9	20.7842	10.1375	0.9070	10.6467	11.0445	4.9451	2.2740	0.7373	2.6711	3.0113	6.6390	0.8796	7.5185
	10.6467	5.2581	0.2641	5.3886	5.5223	2.6711	1.2818	0.2238	1.3892	1.5057			
	5.3886	5.3886	0.1337	0.0000	5.5223	1.3892	1.3892	0.1164	0.0000	1.5057			
10	10.6467	10.6467	0.3978	0.0000	11.0445	2.6711	2.6711	0.3403	0.0000	3.0113	7.1238	0.3948	7.5185

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Dissenting Note of Member (S) Mr. Maqbool Ahmad Khawaja on Tariff Determination / M/s. Zorlu Enerji Pakistan Limited (ZEPL) Case No.NEPRA/TRF-169/ZEPL-2011

1. ZEPL filed first tariff petition in 5-10-2007 for its 49.5MW Wind Power Plant. The Authority gave its determination on 18-12-2007 and allowed levelized tariff of US cents 10.4929/KWH against US cents 10.4647/KWH demanded.

2. ZEPL filed second tariff petition in April-2008 requesting for approval of increased EPC cost and revised tariff due to change in equipment supplier. The Authority made determination on 23-5-2008 and approved a levelized tariff of US cents.12.1057/KWH.

3. The 2nd tariff determination was dissented by the undersigned on the following grounds:

   (i) Within a period of four months project cost was increased & additional cost was demanded because of lender's demand for increase due to their concerns over performance of machines being manufactured by M/s. Gold Wind - China and thus asking for extension in warranty period from 30 months to 60 months.

   (ii). In the first tariff petition submitted by ZEPL dated 5-10-2007, it was reaffirmed that "**cost of project as quoted in petition is firm and final and they will not ask to reopen the cost of project at any late stage**".

4. (i) As per determination dated 23-5-2008 against 2nd petition of ZEPL, it was ensured by sponsor that the project will be completed by second half of 2009 and will not be delayed beyond second half of 2009 as committed by M/S. ZEPL.

   (ii) It is a matter of record that ZEPL could not complete their project of 49.5MW as per commitment. Even the first phase of 6MW (5x1.2) could not be installed & completed by December-2009. Moreover out of 5 wind turbines installed the maximum generation so far achieved is less than 1MW against 6 MW installed capacity in any month since installation. (As informed by HESCO). **It is strange that case officer has not mentioned this fact before the Authority during presenting the case.**

   (iii) It has been mentioned in determination that ZEPL came into operation in Mid-2009 and it has been selling energy for 6MW capacity to HESCO at mutually agreed rates. **Neither ZEPL Phase-I came into operation in mid-2009 nor any rates agreed mutually between HESCO & ZEPL because of non-completion of Phase-I.**

(Continued)

5. (i) The present petition by M/S. ZEPL being 3rd. is again based on change of equipment on the plea that M/s. Gold Wind - China contract could not be materialized & present petition is based on signed EPC and has asked for higher tariff for Phase-I & Phase-II combined.

(ii) Interestingly during process of 2nd petition of April-2008, it was also confirmed that contract with M/S. Gold Wind is signed. Copy was also provided to the Authority as confirmed in determination dated 23-5-2008.

(iii) A serious question arises that if M/s. Gold Wind – China could not supply equipment as per agreement, what penalties were imposed on them by M/s. ZEPL.

6. (i) In my considered opinion, the first phase of installation of 6MW is still not complete as per commitment because of reduced production of electricity i.e. less than 1 MW against 6MW. As such ZEPL do not qualify for claiming cost of installation of 6MW equipment which is not capable of production as per design capacity. The claim of ZEPL that their equipment could not produce power due to high temperature is strange. Rather it proves that wrong selection was made by ZEPL. I also do not agree with their contention that generation is reduced because of high temperature. If so, why same turbines / equipment could not produce electricity as per design capacity during winter when the temperature is very low. As such cost incurred against wrong selected equipment as claimed / determined shall not be considered at all and allowed. Moreover how higher tariff can be allowed for Phase-I equipment claimed to be purchased in 2007 & for which a tariff was also allowed in previous determinations, twice.

(ii) I am of the considered opinion that no proper engineering was done or data collected of the area before deciding and choosing the equipment of phase-1 by M/S. ZEPL and their failure and so any loss sustained on this account shall be borne by ZEPL and cost not be allowed and transferred to the consumers by allowing even higher tariff on project phase-1.

7. The present and third petition combining the phase-1 of first and second petition with new project in principle shall not be allowed. Moreover how can we consider the authenticity of new EPC cost as firm when in the first and second petition it was also confirmed as their cost being firm and final. Also if project is again not completed as per new assurances what Authority can do? Claim of ZEPL that EPC contractor has mobilized at site has not been checked.

8. Case Office has referred to change of equipment allowed to "Dawood Power" but did not compare tariff allowed to Dawood Power which is lesser than being allowed to ZEPL.

(Continued)

9. I had asked for transcripts of audio-recording of the hearing held on 30-4-2008 to reconfirm the commitment / assurances made by M/S. ZEPL during hearing but **it is pertinent to point out that I was informed that same is not available.**

10. I will also propose to seriously consider some methodology to avoid allowing tariff revision on one project number of times just because it was delayed due to certain deficiencies in engineering and project planning / execution. After all why consumers should pay more for such delays whereas Authority can not take any action on such sponsors for any delay or cost increase.

Therefore, based on the above mentioned observations, I dissent from the decision of the Authority for allowing higher tariff of US cents 13.3456/KWH.

7/7/11

(MAQBOOL AHMAD KHAWAJA)
MEMBER (S)
7 July, 2011

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY