



# National Electric Power Regulatory Authority

Islamic Republic of Pakistan

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Registrar

No. NEPRA/TRF-188/FWEL-2011/2040-2042

March 16, 2012

Subject: **Determination of National Electric Power Regulatory Authority in the matter of Tariff Petition filed by Foundation Wind Energy-I Ltd. (Case No. NEPRA/TRF-188/FWEL-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 (33 pages) in Case No. NEPRA/TRF-188/FWEL-2011.

2. The Determination is being intimated to the Federal Government for the purpose of notification of the approved tariff 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 15 of the Determination relating to the reference tariff, adjustments, indexation and terms and conditions etc along with Annexure-I & II needs to be notified in the official Gazette.

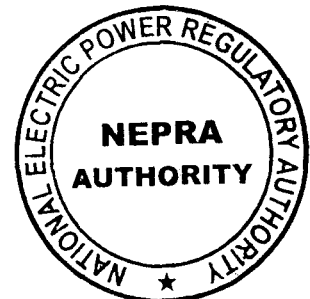
Enclosure: As above

( Syed Safeer Hussain )

Secretary  
Ministry of Water & Power  
'A' Block, Pak Secretariat  
Islamabad

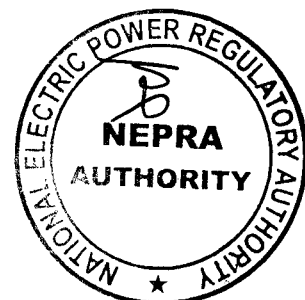
CC:

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



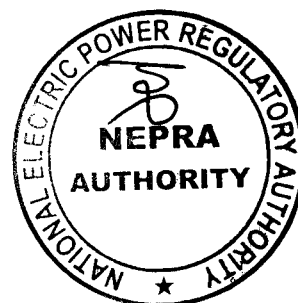
**Determination of National Electric Power Regulatory Authority in the matter  
of tariff petition filed by Foundation Wind Energy - I Limited  
(Case No. NEPRA/TRF-188/FWEL-I-2011)**

1. Foundation Wind Energy - I Limited (hereinafter referred to as the "petitioner") filed a tariff petition (hereinafter referred to as the "petition") under rule 3 of the National Electric Power Regulatory Authority (Tariff Standards and Procedure) Rules, 1998 (hereinafter referred to as the "Tariff Rules") on September 09, 2011 for determination of generation tariff in respect of its 50 MW wind power project envisaged to be set up at Gharo, District Thatta in the Province of Sindh.
2. In accordance with sub-rule 3 of rule 4 of the Tariff Rules, the petition was admitted for hearing by the National Electric Power Regulatory Authority (hereinafter referred to as "the Authority") on September 14, 2011. Consequent to the admission, notice of admission/public hearing was published in the national newspapers on September 29, 2011 inviting thereby all the stakeholders, interested/affected persons to participate in the tariff setting process through filing of comments / intervention requests. Further, in accordance with sub-rule 5 of rule 4 of the Tariff Rules, the Authority also gave directions for service of notices to the respondents and other parties which in the opinion of the Authority were likely to be affected or interested or may be of assistance to the Authority in arriving at a just and informed determination, for filing comments, replies or communications in opposition or in support of the petition. In response to the notices of admission/public hearing, no intervention request was filed. However, comments were received from the stakeholders regarding net annual energy generation, efficiency of selected wind turbines in the high ambient temperatures, various components of the project cost, bonus energy, pre COD sale of energy and some other matters. These comments have been considered by the Authority and where appropriate have been discussed in relevant parts of this determination. Public hearing in this regard was held on October 18, 2011 at Islamabad, which was attended by the petitioner, representatives of the proposed power purchaser, Alternative Energy Development Board (hereinafter referred to as "AEDB") and various other stakeholders.
3. Summary of the key information provided by the petitioner is as follows:



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Type of the project	:	Wind power project
Project location	:	Gharo, District Thatta, Sindh, Pakistan
Installed capacity	:	50 MW
Land area	:	1,210 acres
Concession period	:	20 years from commercial operations
Proposed power purchaser	:	National Transmission And Despatch Company Limited
EPC contractors	:	Nordex and Descon
Turbine specifications		
Manufacturer	:	Nordex
Model	:	N 100/2500
Number of turbines	:	20
Hub height	:	80 meters
Turbine capacity	:	2.50 MW each
Estimated net annual benchmark energy	:	129.10 GWh.
Annual net plant capacity factor	:	29.47%
Financing structure	:	Debt 75% - Equity 25%
Debt composition	:	66.67% foreign and 33.33% local
Interest rate	:	For foreign debts : Six months LIBOR + 4.60% For local debts : Six months KIBOR + 2.95%
Debt repayment period	:	Upto 12 years including up to 24 months grace period
Repayment schedule basis	:	Biannual
Return on equity	:	17%
O & M contractors	:	Consortium of Nordex and Descon with Nordex in the lead
Project cost		US \$ in millions
Off shore cost	:	83.595
On shore cost	:	27.611
Letter of credit confirmation charges	:	0.733
Total EPC cost	:	111.939
Non-EPC costs	:	1.188
Project development costs	:	3.040

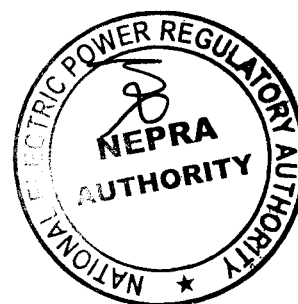


Land cost	:	0.099				
Duties and taxes	:	0.711				
Pre-COD insurance	:	1.511				
Financial charges	:	3.519				
Working capital	:	1.037				
Interest during construction	:	5.658				
<b>Total project cost</b>	:	<b>128.703</b>				
Project operations cost	:	(US \$ in millions)				
			Year 1 – 2	Year 3 – 5	Year 6 – 10	Year 11 – 20
		O&M costs	1.815	3.128	3.395	3.280
		Insurance cost	1.112	1.112	1.112	1.112
			2.927	4.240	4.507	4.392
20 years levelized tariff	:	Rs. 14.0481/kWh (US cents 16.2972/kWh)				
Exchange rate	:	1 US \$ = PKR 86.20				

#### 4. Issues

Based on submissions of the petitioner, comments offered by the stakeholders as well as proceedings of the case, following main issues were framed for discussion and consideration of the Authority:

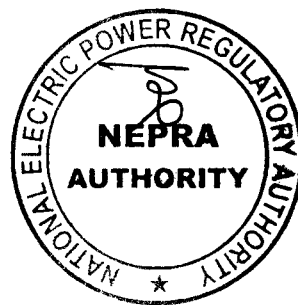
- Whether net benchmark annual energy generation as claimed by the petitioner is justified?
- Whether construction period claimed by the petitioner is justified?
- Whether EPC cost as claimed by the petitioner is justified?
- Whether other project costs as claimed by the petitioner are justified?
- Whether the terms and conditions of debt claimed by the petitioner are justified?
- Whether return on equity as claimed by the petitioner is justified?
- Whether O & M costs claimed by the petitioner are justified?
- Whether insurance during operations as claimed by the petitioner is justified?
- Whether other matters namely, bonus energy, pre-COD sale of energy and correction factor as claimed by the petitioner are justified?



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5. **Whether net benchmark annual energy generation as claimed by the petitioner is justified?**

- 5.1 The petitioner has submitted that its net annual benchmark energy will be 129.10 GWh. on the basis of P75 probability of exceedance with its selected wind turbines of Nordex having hub height of 80 meters. The net annual plant capacity factor on the basis of stated proposed benchmark annual energy works out to 29.47%.
- 5.2 National Transmission and Despatch Company Limited (hereinafter referred to as "NTDC") in its comments has submitted that the probability of exceedance given in the tariff petition is P75 whereas AEDB allows only P50 probability of exceedance. NTDC has also submitted that the estimated net annual benchmark energy of 129.10 GWh at plant factor of 29.47% claimed by the petitioner is quite low as compared to FFC Energy Limited and Zorlu Enerji Pakistan Limited.
- 5.3 The petitioner in response to these comments has submitted that it has requested AEDB to allow it to use the energy estimates based on the probability of exceedance of P75, as wind speed is lower in Ghara area compared to Jhampir area where majority of other wind power projects currently being developed are located. The petitioner has contended that this fact increases risk profile of the projects based in Ghara area. The petitioner has further clarified that P75 probability of exceedance has been used for estimating the annual energy in its tariff petition therefore annual plant capacity factor of the project is lower than that of FFC Energy Limited and Zorlu Enerji Pakistan Limited. The petitioner has also referred to report of its technical consultant namely Sgurr Energy Limited, which has suggested that its tariff should be assessed on the P75 benchmark energy yield.
- 5.4 The petitioner has also argued that the use of P 75 energy estimates does not increase its return nor does it increase the risk of the power purchaser, with regards to wind speed risk coverage offered under the Policy for Development of Renewable Energy for Power Generation 2006.
- 5.5 The Authority has observed that AEDB vide letter No. B/3/1/BEL/07 dated December 15, 2011 has confirmed that it has carried out the independent review/verification of production estimates of the petitioner through its



international independent consultant RISOE. AEDB has submitted that it considers the power production estimates verified by RISOE as lower bound. In view of the verification of generation estimates carried out by RISOE, AEDB has approved the benchmark annual energy generation of 144.50 GWh at P50 probability of exceedance.

- 5.6 The Authority has noted that AEDB, after consideration of arguments of the petitioner, has approved bench mark annual energy at P50 level as against P75 level claimed by the petitioner. The Authority on the basis of verification exercise carried out by the AEDB, approval of annual benchmark energy by AEDB and in the light of available documentary evidences allows 144.50 GWh as annual benchmark energy for the project.

**6. Whether construction period claimed by the petitioner is justified?**

- 6.1 The petitioner on a specific inquiry has submitted that it currently envisages the following timelines for project completion from the date of achievement of financial close:

- Scheduled commercial operations date – Fifteen months
- Required commercial operations date – Eighteen months

- 6.2 The petitioner has further submitted that these dates are based on the assumption that the Energy Purchase Agreement (hereinafter referred to as the "EPA") will stipulate that the power purchaser will provide interconnection facilities 180 days prior to the scheduled commercial operations date. Any variation in this assumption will impact the scheduled commercial operations date and required commercial operations date of the project. The petitioner has also suggested that to ensure that power purchaser's interconnection facilities are available 180 days prior to the scheduled commercial operations date, it should also be specifically mentioned by the Authority in the tariff determination.

- 6.3 The Authority has considered the aforementioned requests of the petitioner and has observed that according to the EPC contracts submitted by the petitioner its scheduled taking over date from the EPC contractors is the date falling 458 days after the project commencement date. The Authority further noted that in the



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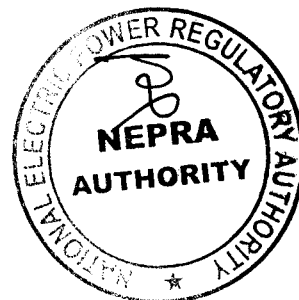
recently determined cases of wind power projects, the Authority has allowed maximum construction period of 18 months. Keeping in view the aforementioned facts and the timeframe considered reasonable for the construction of wind power generation farm of the petitioner, the Authority hereby allows the petitioner maximum project construction period of 18 months. The petitioner is hereby directed that detail of any liquidated damages, penalties, etc. (by whatever name called), actually recovered/recoverable by the petitioner from the EPC contractor(s), pertaining to the construction period allowed by the Authority, shall be submitted to the Authority for adjustment in the project cost, along with application for allowing tariff adjustments at the commercial operations date (hereinafter referred to as "COD"). Further, the construction start date should be negotiated by the petitioner with the power purchaser and should be incorporated in the EPA. The petitioner will be allowed adjustments at the COD for maximum project construction period of 18 months starting from the construction start date stipulated in the EPA. Furthermore, the exact timing of availability of interconnection facilities should be mutually agreed between the petitioner and the power purchaser. The Authority hereby directs the power purchaser to fully comply with the terms of EPA signed by it, regarding provision of interconnection facilities.

- 6.4 The petitioner is hereby directed to ensure that all the terms and conditions relating to construction period in the EPA confirm with the aforesaid terms and conditions allowed by the Authority.

**7 Whether EPC cost as claimed by the petitioner is justified?**

- 7.1 The petitioner has requested for allowing EPC cost of US \$ 111.939 million and has provided following break-up of EPC cost:

	<u>US \$ in millions</u>
Off shore cost	
- Euro component	48.927
(Euro 35.453 million converted into US \$ at exchange rate of 1.38)	
- US \$ component	34.668
	<hr/> 83.595



On shore cost

- US \$ component

27.611

Letter of credit confirmation charges

0.733

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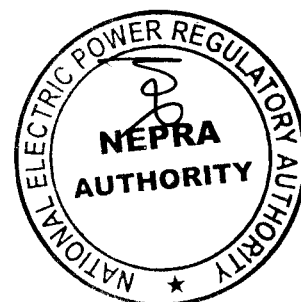
**111.939**

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7.2 The petitioner has submitted that it had conducted complete due diligence to select EPC contractors and had issued requests for proposals to various leading EPC contractors worldwide. Number of contractors submitted their proposals in response to the requests for proposals. Following detailed review of the proposals, the petitioner and its advisors also analyzed the risks associated with the execution of the project on the basis of bids received. Lengthy discussions were held with the consultants, advisors and prospective lenders for evaluation of the proposals and for structuring of an EPC arrangement that would not only ensure timely completion of project in accordance and compliance with the highest applicable standards but would also enhance bankability of the project. As a result of months of intense negotiations and thorough due diligence, a consortium of Nordex and Descon, under a joint and several arrangement, were finally selected as EPC contractors. Nordex agreed to take the lead role in the turn key EPC solution. Definitive and legally binding EPC agreements were executed on August 23, 2011. The EPC agreements comprise of:

- Agreement for procurement and supply of equipment (offshore agreement); and
- Agreement for engineering, construction, operation and maintenance (onshore agreement).

7.3 The petitioner has further submitted that the technology for the project has been selected after detailed analysis of the various power generation technologies available internationally. Nordex N100/2500 is the latest version of the proven wind turbine design which has been in production since 2000 and is only manufactured in Germany and USA.



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- 7.4 The petitioner has also submitted that the EPC cost is inclusive of all withholding taxes payable in respect of the payments to be made to the EPC contractors pursuant to the EPC agreement.
- 7.5 NTDC in its comments has submitted that capability of wind turbines with respect to sustaining its maximum efficiency during the high ambient temperature phase is highly important. With the increase of temperature in the project area, loss of efficiency would occur causing a reduction in the output power. However, operating thresholds with respect to temperature and other basic operating limits of wind turbine generators are not given in the tariff petition. The petitioner in response to these comments has submitted that it has selected wind turbines after a thorough due diligence by technical consultant of the project. The ability of wind turbines to operate at high temperature was one of the key points considered by the technical consultant while selecting the wind turbines. In addition to this, other wind characteristics (such as humidity, air density, etc.) experienced in the Gharo corridor were also considered while selecting the technology. Nordex (the wind turbine manufacturer) has guaranteed that the wind turbine will operate upto a maximum ambient temperature of 42° C at hub height which approximates to > 46° C at ground level.
- 7.6 In addition to the cost of EPC contract, the petitioner has also claimed US\$ 0.733 million as confirmation charges of the letter of credit to be opened in favor of the EPC contractor. The Authority has noted that for wind power projects, the letter of credit confirmation charges have been separately allowed by the Authority in other projects in the past. Therefore keeping in view the size of wind power projects and to be consistent with its earlier decisions, the Authority hereby allows US \$ 0.733 million letter of credit confirmation charges. These charges will be adjusted at COD on actual basis, not exceeding the maximum ceiling of US \$ 0.733 million, upon production of verifiable documentary evidence to the satisfaction of the Authority.
- 7.7 The Authority has further noted that the EPC cost claimed by the petitioner for its project located in Gharo is comparable to EPC costs allowed to other wind power projects located in Jhampir. In the light of available documentary evidence and comparability of this cost with other projects, the Authority hereby approves the EPC cost of US \$ 111.939 million (inclusive of letter of credit confirmation charges of US \$ 0.733 million).



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**8 Whether other project costs as claimed by the petitioner are justified?**

8.1 The other project costs claimed by the petitioner are as follows:

	<u>US\$ in millions</u>
Non-EPC costs	1.188
Project development costs	3.040
Land cost	0.099
Duties and taxes	0.711
Pre-COD insurance cost	1.511
Financial charges	3.519
Permanent working capital	1.037
Interest during construction	5.658
<b>Total</b>	<b><u>16.763</u></b>

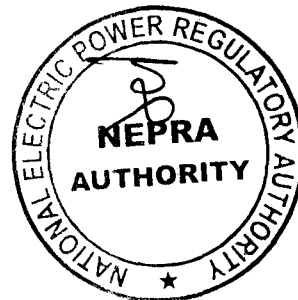
The above costs are discussed in the following paragraphs:

**8.2 Non-EPC Costs**

8.2.1 The petitioner has provided following break-up of non-EPC costs:

	<u>US \$ in millions</u>
Fixed assets	0.152
Project administration office costs	0.148
Cost of accommodation	0.534
Cost of security arrangement	0.154
Optic fiber cost	0.200
<b>Total non-EPC costs</b>	<b><u>1.188</u></b>

8.2.2 According to the petitioner, the abovementioned heads comprise of the following costs:



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Fixed assets

This includes cost of vehicles, equipment, furniture and connectivity facility for remote monitoring.

Project administration office cost

This includes costs associated with rents, utilities, equipment inspection, vehicles fuel, vehicles maintenance and other allied expenses during the construction period.

Cost of accommodation

This also includes the cost of US\$ 0.301 million for construction of a residential facility at site. A 'fit for purpose' residential facility has been planned at project site to accommodate necessary staff. The facility is not intended to cater for the families of the operating staff.

Cost of security arrangement

This represents the costs associated with providing security at offices, accommodation and site; and also security to be provided to the expatriates engaged for the project.

Communication link cost

The total deployment cost (including equipment, materials and laying of the optic fiber) for providing connectivity to the power purchaser has been included under this head.

- 8.2.3 The Authority has observed that two wind power generation projects of the Foundation group are planned to be located in near proximity to each other in the area of Gharo. The Authority has noted that these projects will enjoy the benefit of sharing of some of the resources which will reduce their costs. The Authority has further observed that the explanations and details submitted by the petitioner do not justify allowing the entire non-EPC costs claimed. Accordingly, the Authority has decided to rationalize the costs claimed by the petitioner. After careful scrutiny of the cost details provided by the petitioner and on the basis of other available information, the Authority has assessed an aggregate amount of US \$ 1.000 million



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under the head of non-EPC costs and has decided to allow the same to the petitioner.

8.3 Project Development Costs

8.3.1 The petitioner has provided following break-up of project development costs:

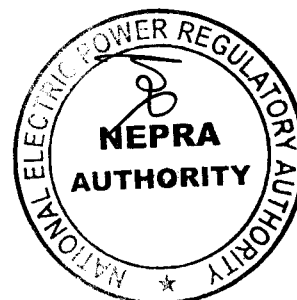
	<u>US \$ in millions</u>
Project feasibility study and cost of technical consultant	0.994
Permits, licenses and fees for company formation	0.247
HR costs	0.920
Traveling expenses	0.217
Financial and legal consultants	0.662
<b>Total project development costs</b>	<b>3.040</b>

8.3.2 According to the petitioner, these include costs of feasibility studies, topographical survey of land, preliminary geotechnical investigation of land, tidal survey, grid interconnection studies, fees of consultants, costs related to the performance guarantee to be furnished to 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 the Authority, costs incurred during formation of the company and costs related to various permits for the project.

8.3.3 After scrutiny of the details provided by the petitioner and on the basis of other available information, the Authority has assessed an aggregate amount of US\$ 2.750 million under this cost head which is accordingly being allowed.

8.4 Land Cost

8.4.1 The petitioner has claimed land cost of US \$ 0.099 million and has submitted that it has leased 1,210 acres of land for the project from AEDB. The petitioner has further submitted that this cost also includes stamp duty, registration fees, costs of survey and demarcation of the land. The Authority in accordance with the previous practice has considered this cost as a part of operating costs/non-EPC costs and accordingly disallows the entire cost claimed here.



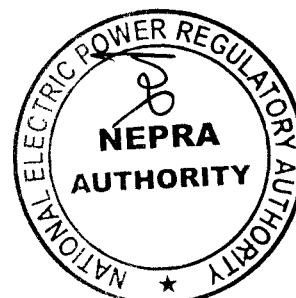
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## 8.5 Duties and Taxes

- 8.5.1 The petitioner has requested for allowing duties and taxes of US \$ 0.711 million and has submitted that it has assumed that Sindh Infrastructure Development Surcharge will be levied @ 0.85% on the imports for the project, while all other duties and taxes have been assumed as nil. The petitioner has requested that any taxes (customs duty/sales tax/special excise duty/income tax/federal excise duty) which are levied, the same should be reimbursed on the basis of actual levy at the COD stage.
- 8.5.2 The Authority has considered the request of the petitioner and has decided to allow duties and taxes of US \$ 0.711 million in accordance with the request of the petitioner. Further, adjustment of duties and taxes on actual at COD stage, will be allowed for only those duties and taxes which are imposed on the petitioner. Adjustment of taxes/duties payable on fees/charges, etc. of various third parties, not directly imposed on the petitioner, will not be allowed. The mechanism for adjustment of duties and taxes at actual on COD is detailed in paragraph (I) (b) of the order.

## 8.6 Pre-COD Insurance Cost

- 8.6.1 The petitioner has claimed US \$ 1.511 million on account of insurance expense during the project construction period. The petitioner has also submitted that the insurance cost does not include administrative surcharge, federal insurance fees and federal excise duty as these are assumed as pass through costs.
- 8.6.2 The Authority has in comparable cases allowed insurance during construction with maximum ceiling of 1.35% of EPC cost. Accordingly, the petitioner is allowed US\$ 1.511 million on account of pre-COD insurance cost claimed by it. This cost will be subject to adjustment at COD on the basis of actual expense, duly verifiable with the relevant supporting documents, up to a maximum limit of 1.35% of the approved EPC cost. The mechanism for adjustment of any duties and taxes imposed on the petitioner is detailed in paragraph (I) (b) of the order.



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8.7 Financial Charges

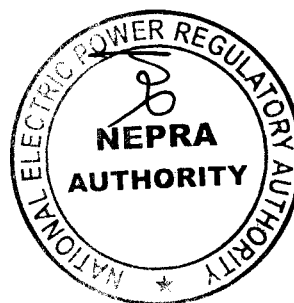
- 8.7.1 The petitioner has claimed US \$ 3.519 million on account of financial charges and has provided the following break-up of financial charges:

	<u>US \$ in millions</u>
Arrangement fees	2.085
Commitment fees	0.155
Agency, monitoring and security trustee fees	0.080
Letter of credit commission	0.248
Lender's advisors fees	0.950
<b>Total financial charges</b>	<b>3.519</b>

- 8.7.2 The petitioner has submitted that financial charges proposed are in excess of 3% of the total debt amount, normally allowed by the Authority, due to the following reasons:

- The cap of 3% of debt amount was introduced for thermal power projects which are much larger in size than a 50 MW wind power project. All fixed financial charges remain unchanged irrespective of the size of the project, therefore cap of 3% of debt on financial charges for wind power projects of 50 MW is unrealistic.
- The petitioner has included a foreign currency loan in its capital structure. Arrangement and commitment fees for foreign financing are significantly higher than for local financing and have resulted in higher financial charges.
- The Authority has allowed financial charges in excess of 3% of the debt amount to some other projects.

- 8.7.3 NTDC in its comments has submitted that the petitioner has claimed variety of fees under the head of financial charges which are 3.65% of the total claimed debt. NTDC has opined that arrangement fees of US \$ 2.085 which forms major portion of financial charges, demands negotiations with the lenders in order to arrive at an optimal figure.

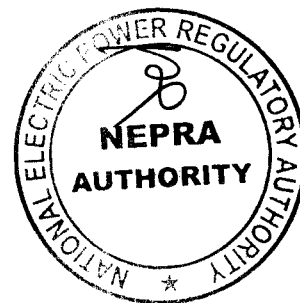


8.7.4 The Authority has considered the claim of the petitioner and has observed that for wind power projects with foreign debt, the Authority has allowed the maximum limit of 3% of the debt (excluding the impact of interest during construction and financial charges) in its earlier tariff determinations. The Authority further noted that the precedent cases quoted by the petitioner are not comparable to wind power projects. The Authority has accordingly decided to allow the financial charges of US \$ 2.653 million to the petitioner. These financial charges are subject to adjustment at COD on the basis of actual expense, up to a maximum of 3% of the allowed debt (excluding the impact of interest during construction and financial charges), on production of authentic documentary evidence.

8.8 Permanent working capital

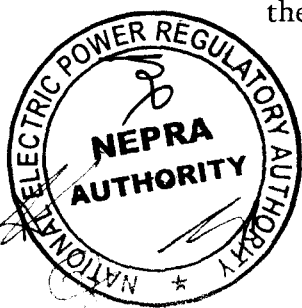
8.8.1 The petitioner has claimed permanent working capital of US \$ 1.037 million and has submitted that under the terms of the EPA, the petitioner will invoice the power purchaser for the settlement of monthly energy payment on or after the first day of the next month to which the monthly energy payment relates. The power purchaser is required to make the payment of the same by the thirtieth day following the day of submission of the invoice. Keeping in view this inflow of funds, the petitioner has argued that an inherent mismatch in the availability of cash flows for meeting the following payments exists:

- The petitioner is required to collect sales tax from the power purchaser on behalf of the Government of Pakistan and deposit the same by the 25<sup>th</sup> day of the month i.e. earlier than the date of collection of invoice from the power purchaser.
- The petitioner would be making payments to the operations and maintenance contractor monthly 15 days in arrears whereas the same will be recovered from the power purchaser 30 days in arrears.
- The terms of debt financing stipulate repayment of debt on semiannual basis commencing from COD. As the petitioner would have only received 5 months of revenue in accordance with the 30 days payment terms under the EPA, thus a payment shortfall of 1/6th of the debt installment would be created which needs to be financed through working capital.



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- 8.8.2 The petitioner has further submitted that permanent working capital will also reduce its default risks emanating from the considerable time lags in the receipt of payments from the power purchaser. The petitioner has explained that keeping in view the fact that working capital for post COD period has not been allowed by the Authority in earlier cases, permanent working capital should be allowed to be injected upfront, in replacement of revolving credit line from banks. Further, the petitioner has requested for allowing onetime adjustment in the permanent working capital facility at the COD.
- 8.8.3 NTDC in its comments has submitted that the petitioner has claimed permanent working capital facility, to be adjusted at COD, in replacement of a revolving credit line. However, in case of renewable energy projects no fuel cost is involved therefore permanent working capital facility is not justified.
- 8.8.4 The Authority has noted that working capital cost/permanent working capital has not been allowed to any wind power project, as the Authority considers that arguments forwarded in its support do not justify the claim. Further, some of the wind power projects have even not claimed this cost. The Authority further noted that according to the billing mechanism provided in the EPA, an IPP also gets paid for certain components of tariff such as return on equity, debt servicing for the five months preceding the debt payment due date, etc. in advance which have not been highlighted by the petitioner. In view of the grounds detailed above the Authority declines the request of the petitioner to allow permanent working capital of US \$ 1.037 million as a part of the project cost.
- 8.9 Interest During Construction
- 8.9.1 The petitioner has estimated an amount of US\$ 5.658 million on account of interest during the project construction period (hereinafter referred to as "IDC") in its tariff petition. According to the information provided by the petitioner, the IDC has been calculated on the basis of construction period of 15 months. The Authority is cognizant of the fact that the petitioner has been allowed adjustment at COD for the maximum project construction period of 18 months as detailed in paragraph 6.3. However, the Authority encourages the petitioner to complete the project within its scheduled commercial operations date of 15 months. Accordingly IDC of the petitioner is computed for 15 months. Based on the financing and other terms/conditions allowed to the petitioner and construction period of 15 months estimated by the petitioner the Authority has assessed IDC as US \$ 5.335 million.
- 8.9.2 The IDC will be adjusted at COD on the basis of actual debt draw downs (within the overall debt allowed by the Authority at COD), actual PKR/US\$ exchange rate





variation for foreign loan denominated in US \$ and actual interest rates not exceeding the limit of 6 months KIBOR plus 2.95% for local financing and 6 months LIBOR per annum plus 4.50% for foreign financing, during the project construction period allowed by the Authority.

9. Recapitulating the approved project cost for the petitioner under various heads is given hereunder:

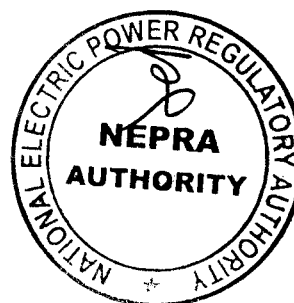
	<b>Approved (US \$ in millions)</b>
EPC cost as per the EPC contract	111.206
Letter of credit confirmation charges	0.733
Non-EPC costs	1.000
Project development costs	2.750
Duties and taxes	0.711
Pre-COD insurance	1.511
Financial charges	2.653
Interest during construction	5.335
<b>Total Project Cost</b>	<b>125.899</b>

10. Whether the terms and conditions of debt claimed by the petitioner are justified?

- 10.1 The petitioner has proposed the following debt terms:

	<b>Foreign debt</b>	<b>Local debt</b>
Percentage of total debt	66.67%	33.33%
Interest rate	Six months LIBOR + 4.60%	Six months KIBOR + 2.95%
Debt repayment period	12 years including upto 24 months grace period	12 years including upto 24 months grace period
Repayment basis	Biannual	Biannual

- 10.2 The petitioner has submitted that the benefit of savings from procurement of local financing at below 300 basis points should be shared in the ratio of 60:40 between the power purchaser and the petitioner. NTDC in its comments has also submitted



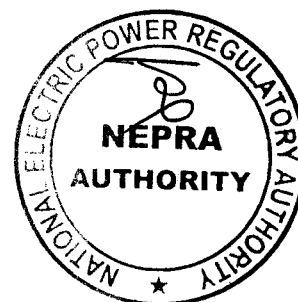
that the savings on account of debt arrangement at better terms shall be shared on a yearly basis in the ratio of power purchaser/Govt.: IPP = 60:40 in the light of Policy for Development of Renewable Energy for Power Generation 2006.

- 10.3 The Authority has considered the proposed debt terms of the petitioner and has noted that the spread of 4.60% over six months LIBOR requested by the petitioner is unjustified. The Authority has decided to allow maximum spread of 4.50% over six months LIBOR to the petitioner for its foreign financing. The Authority has further noted that the spread of 3% on local financing referred to by the petitioner was fixed as a ceiling for the fiscal year 2005-2006 and is no longer applicable. The Authority has however decided to allow the petitioner benefit of savings below 3% in spread on local financing to the extent of 40% i.e. 0.02%. The Authority allows all the other terms and conditions of debt detailed above to the petitioner.
- 10.4 The Authority directs the petitioner to try to negotiate better financing terms than the one's allowed by the Authority. If the petitioner arranges better terms, the overall impact of reduction in debt servicing will be shared on yearly basis in the following ratio:

Power purchaser / Government : Petitioner = 60 : 40

11. **Whether return on equity as claimed by the petitioner is justified?**

- 11.1 The petitioner has submitted that AEDB has proposed under the draft of the Medium Term Policy For Development of Alternative and Renewable Energy to increase the return to the sponsors to 18%, increased risk on capital employed coupled with the economic uncertainties (circular debt) justifies an increase in the required rate of return, power purchaser is only covering the wind speed risk while the investor is taking the risk of other wind characteristics (air density, wind frequency distribution, temperature and humidity), etc. The petitioner has argued that based on these grounds, it is justified to request return on equity of 18% for the project, however given its request with regards to the energy generation estimates to be used for the tariff determination on P 75 level it is willing to forego the higher return and accept a lower return on equity of 17% (on IRR basis net of withholding tax).



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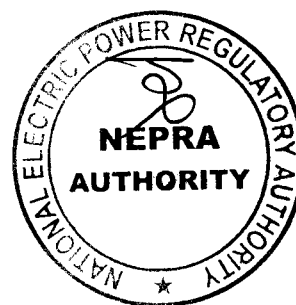
- 11.2 The Authority has observed that it has already allowed 17% return on equity (IRR based) to promote wind power sector. The return on equity allowed to wind power sector is 2% more than the return on equity allowed in the case of thermal power projects. The Authority finds no justification to increase the rate of return on equity of the petitioner and has decided to allow 17% (IRR based) return on equity to the petitioner as has already been allowed to other wind power projects.
- 11.3 The Authority has further noted that the petitioner has not included return on equity during construction (hereinafter referred to as "ROEDC") in its tariff computations and has requested for allowing the same at the COD stage. The petitioner on an inquiry has estimated ROEDC of Rs. 0.2231 per kWh, however it has not submitted the computations of ROEDC. The Authority considering the terms and conditions allowed to the petitioner, and the fact that ROEDC is adjustable at COD, has assessed ROEDC as US \$ 3.506 million whose impact has been included in the tariff at determination stage. The ROEDC will be adjusted at COD on the basis of actual equity injections (within the overall equity allowed by the Authority at COD) during the project construction period allowed by the Authority.

12. Whether O & M costs claimed by the petitioner are justified?

- 12.1 The petitioner has claimed following O & M costs per annum:

	Foreign O & M		Local O & M	Total
	Denominated in US \$	Denominated in Euro		
	US \$ in millions			
Year 01 – 02	1.200	-	0.615	1.815
Year 03 – 05	1.333	1.180	0.615	3.128
Year 06 – 10	1.055	1.725	0.615	3.395
Year 11 – 20	1.055	1.725	0.500	3.280
Indexations	PKR/US \$ & US CPI	PKR/Euro & Euro area harmonized index of consumer prices	WPI	

- 12.2 The petitioner has submitted that O & M costs include the following:



- Cost of outsourced O & M
- Fixed assets
- Payroll and allied expenses
- Vehicles fuel and maintenance
- Land lease cost payable to AEDB
- Other administrative costs
- Lenders related costs

- 12.3 The petitioner has further submitted that it has entered into legally binding O & M contracts with the consortium of Nordex and Descon for a period of ten years after COD out of which first two years are also covered under the manufacturer's warranty. The O & M costs for the first two years are lower compared to the next three years as major spare parts during the first two years will be covered under warranty. From third year onwards, O & M of the project will be carried out by the O & M contractor and the marginal increment from year 6 onwards reflects the contractor's expectation of additional wear and tear of the parts due to the operations of turbines and BOP equipment under extreme climatic conditions. After ten years a cost and benefit analysis of carrying out the O & M work in house or again outsourcing the work to the O & M contractor will be carried out. The O & M cost for the last ten years is estimated considering the fact that any saving from carrying out the O & M in house would compensate for the additional costs envisaged during the later life of the plant.
- 12.4 The petitioner has also submitted that the O & M costs have been estimated keeping in view the location of the project in the vicinity of Arabian Sea, resulting in higher than normal levels of wear and tear due to moisture, corrosion, inundation during high tides and elevated levels of underground water content which also rises during high tides submerging majority of the wind farm site.
- 12.5 The Authority is cognizant of the fact that O & M costs of the petitioner, due to its location in Gharo, will be higher compared to wind power projects located in Jhampir area. The Authority however is of the opinion that O&M costs requested by the petitioner are considerably on the higher side and need to be rationalized.



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After detailed scrutiny of the information provided by the petitioner, comparison with the O & M costs already allowed to similar projects and information otherwise available, the Authority has assessed the following O & M costs of the petitioner (including land costs disallowed as a part of the project cost as discussed in the preceding part of this determination):

Years	US \$ in millions
Year 01 – 02	1.450
Year 03 – 05	2.650
Year 06 – 10	2.900
Year 11 – 20	2.900

These costs have been further subdivided into foreign component and local component in the same ratio as claimed by the petitioner.

- 12.6 The Authority has also considered the request of the petitioner for allowing indexation of a portion of O & M costs with PKR/Euro exchange rate parity and Euro area harmonized index of consumer prices. The Authority has noted that it is consistently allowing indexation of foreign component of O & M cost with US \$ plus US CPI and this practice is also in conformity with the approval of ECC on this matter. The Authority therefore rejects the demand of the petitioner for allowing indexation of a portion of O & M costs with Euro and Euro area harmonized index of consumer prices.

**13. Whether insurance during operations as claimed by the petitioner is justified?**

- 13.1 The petitioner has requested for allowing US \$ 1.112 million per annum as insurance expense in the post-COD 20 years of tariff control period. The cost of insurance claimed by the petitioner is about 1% of its EPC cost. The petitioner has also submitted that any increases upto 1.35% of the EPC cost will be charged at actual. Moreover the petitioner has requested for allowing indexation of US \$ to PKR for this cost.
- 13.2 The Authority considers the requested insurance cost of US \$ 1.112 million per annum claimed by the petitioner as reasonable and hereby allows the same. In case of insurance denominated in US \$, insurance cost component of tariff will be adjusted on account of US\$/PKR exchange rate variation on annual basis. Further,



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insurance component of the reference tariff will be adjusted as per actually incurred prudent costs, subject to maximum of 1.35% of the EPC cost, on annual basis upon production of authentic documentary evidence by the petitioner.

14 Whether other matters namely, bonus energy, pre-COD sale of energy and correction factor as claimed by the petitioner are justified?

14.1 Bonus energy

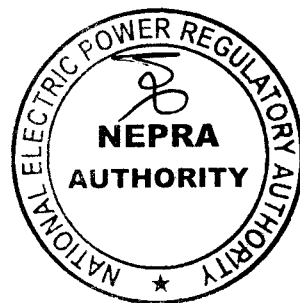
The petitioner has submitted that it should be explicitly stated in the determination that bonus energy payment should be made on monthly basis. NTDC in its comments has submitted that the Authority should consider the fact that bonus energy is established only when the project achieves the annual benchmark energy as monthly payment of bonus energy is not workable.

The Authority has considered the issue and has observed that consistent with its previous decisions, bonus is allowed for supply of electric power in excess of annual benchmark energy generation in the instant tariff determination, and payment of bonus energy shall be made accordingly.

14.2 Pre COD sale of energy

The petitioner has requested the Authority to allow it to claim compensation from the power purchaser for all electricity supplied into the grid system prior to achievement of COD at the tariff rate applicable for the first year minus the debt servicing components of tariff.

NTDC in its comments has submitted that as per precedent of EPA with FFC Energy Limited, the power purchaser has no obligation to pay for the net delivered energy to the interconnection point during testing. This is because as a matter of principal all such costs, if any, are to be capitalized. Moreover in case of thermal IPPs' for test energy prior to COD, the power purchaser is required only to pay the fuel component. In case of wind power no fuel is consumed therefore the power purchaser shall have no obligation to pay for any net electrical output during testing. NTDC has requested for continuation of the prevailing policy.



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The Authority has in earlier comparable determinations allowed sale of electricity prior to COD pursuant to bilateral agreement on mutually agreed terms between the buyer and the seller. The Authority here by maintains its decision on this issue in the case of the petitioner. The mutually agreed tariff for pre COD sale of energy shall in no case be higher than the tariff determined by the Authority.

#### 14.3 Correction factor

The petitioner has requested the Authority to allow the following correction factor formula to be applied to the monthly energy generation to be used for calculation of the monthly energy payment:

$$\text{Correction factor} = \frac{(\text{Sum of monthly bench mark energy for a year} / 12)}{\text{Monthly benchmark energy for the relevant month}}$$

The petitioner has argued that the energy produced for a given month is directly dependent on the wind speed for that month. Wind speed varies significantly from month to month resulting in erratic project cash flows, thus hampering the petitioner's debt servicing capability. The petitioner has submitted that the correction factor will not impact its total annual revenues. NTDC during the public hearing opposed the correction factor formula proposed by the petitioner.

The Authority has considered the request of the petitioner and has noted that:

- This correction factor formula has not been allowed to any other wind power project by the Authority.
- To harmonize the cash flows of wind power projects, the Authority already allows wind power projects semi-annual debt repayment, as against quarterly debt repayment normally allowed in case of other projects.
- Due to application of correction factor formula, annual revenues of the petitioner will be impacted, in case the petitioner fails to supply the benchmark energy due to problems at its own end.

Keeping in view the aforementioned facts, the Authority does not accept the request of the petitioner to allow the proposed correction factor formula.



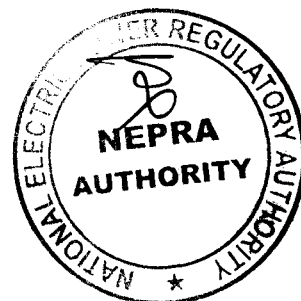
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15. Order

Pursuant to Rule 6 of the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000, Foundation Wind Energy – I Limited (the petitioner) is allowed to charge the following specified/approved tariff for delivery of electricity to the power purchaser:

Tariff Components	Year 1-2	Year 3-5	Year 6-10	Year 11-20	Indexation
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	
Fixed O&M					
Local	0.2931	0.3108	0.3134	0.2637	WPI
Foreign	0.5719	1.2700	1.4166	1.4663	PKR/US\$ & US CPI
Insurance	0.6634	0.6634	0.6634	0.6634	PKR/US\$
Return on equity	3.1919	3.1919	3.1919	3.1919	PKR/US\$
Return on equity during construction	0.3717	0.3717	0.3717	0.3717	PKR/US\$
Debt service	8.5534	8.5534	8.5534	-	PKR/US\$ & LIBOR for foreign loan and KIBOR for local loan

- i) The reference tariff has been calculated on the basis of net annual benchmark energy generation of 144.500 GWh at annual net plant capacity factor of 32.99% for installed capacity of 50 MW.
- ii) The above charges will be limited to the extent of net annual energy generation of 144.500 GWh. Net annual generation supplied to the power purchaser in a year, in excess of benchmark energy of 144.500 GWh will be charged at 10% of the prevalent approved tariff.
- iii) In the above tariff no adjustment for carbon emission reduction receipts, has been accounted for. However, upon actual realization of carbon



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emission reduction receipts, 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, as amended from time to time.

- iv) The reference PKR/dollar rate has been taken as 86.20.
- v) The above tariff is applicable for a period of twenty (20) years commencing from the commercial operations date.
- vi) The monthly benchmark energy table along with monthly power curves should be verified by the Alternative Energy Development Board (AEDB)/power purchaser before finalization of energy purchase agreement.
- vii) The petitioner 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, as amended from time to time and the mechanism approved by the AEDB.
- viii) The component wise tariff is indicated at **Annex-I**.
- ix) Debt Servicing Schedule is attached as **Annex-II**.

**I. One Time Adjustments**

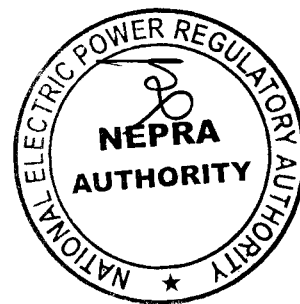
The following onetime adjustments shall be applicable to the reference tariff:

- a. Confirmation charges for the letter of credit to be opened in favor of the EPC contractor will be adjusted at COD on actual basis, not exceeding the maximum ceiling of US \$ 0.733 million, upon production of verifiable documentary evidence to the satisfaction of the Authority.
- b. Duties and/or taxes, not being of refundable nature, imposed on the petitioner upto the commencement of its commercial operations will be subject to adjustment at actual on COD, as against US \$ 0.711 million allowed now, upon production of verifiable documentary evidence to the satisfaction of the Authority.



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- c. Insurance will be adjusted as per actually incurred prudent costs, subject to maximum limit of 1.35% of the approved EPC cost, on production of authentic documentary evidence at the time of COD.
- d. Financial charges will be adjusted at COD on the basis of actual expense, up to a maximum of 3% of the total debt allowed (excluding the impact of interest during construction and financial charges), on production of authentic documentary evidence.
- e. The interest during construction will be adjusted at COD on the basis of actual debt draw downs (within the overall debt allowed by the Authority at COD), actual PKR/US\$ exchange rate variation for foreign loan denominated in US \$ and actual interest rates not exceeding the limit of 6 months KIBOR plus 2.95% for local financing and 6 months LIBOR per annum plus 4.50% for foreign financing, during the project construction period allowed by the Authority. Further, benefit of savings in spread on local financing of 0.02% per annum allowed, will be passed on to the petitioner.
- f. The return on equity during construction will be adjusted at COD on the basis of actual equity injections (within the overall equity allowed by the Authority at COD) during the project construction period allowed by the Authority.
- g. The return on equity (including return on equity during construction) will be adjusted at COD on the basis of PKR/US\$ exchange rate variation.
- h. All project costs i.e. costs incurred prior to commercial operations date (COD) have been allowed in the determination in US\$ as the exact currency of payment is not known yet. The EPC contract cost will be adjusted at COD on account of variation in US\$/PKR and Euro/PKR parity, on production of authentic documentary evidences to the satisfaction of the Authority. At the COD for all project costs payable in PKR, the amounts allowed in US \$ will be converted into PKR using the reference PKR/dollar rate of 86.20.
- i. Any liquidated damages, penalties, etc. (by whatever name called), actually recovered/recoverable by the petitioner from the EPC contractor(s), pertaining to the construction period allowed by the Authority, will be adjusted in the project cost.



12/8/11

- j. 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 90 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 any tax is imposed on the petitioner, the exact amount paid by the petitioner shall be reimbursed by the power purchaser to the petitioner on production of original receipts. This payment will be considered as a pass-through payment spread over a 12 months period. Furthermore, in such a scenario, the petitioner shall also submit to the power purchaser details of any tax shield savings and the power purchaser shall deduct the amount of these savings from its payment to the petitioner on account of taxation.

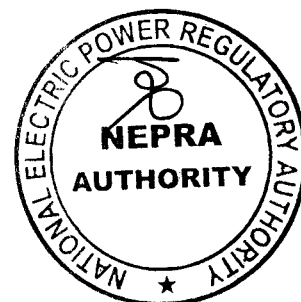
Withholding tax on dividends is also a pass through item just like other taxes as indicated in the government guidelines for determination of tariff for new IPPs. The power purchaser shall make payment on account of withholding tax at the time of actual payment of dividend, subject to maximum of 7.5% of 17% return on equity (including return on equity during construction). 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 payout.

## III. Indexations:

The following indexation shall be applicable to the reference tariff:

### i) Indexation applicable to O&M

The local part of O&M cost will be adjusted on account of local inflation and O&M foreign component will be adjusted on account of variation in dollar/rupee exchange rate and US CPI. Quarterly adjustments for inflation and exchange rate variation will be made on 1<sup>st</sup> July, 1<sup>st</sup> October, 1<sup>st</sup> January and 1<sup>st</sup> April respectively



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on the basis of latest available information with respect to WPI (notified by the Federal Bureau of Statistics)/alternative index determined by the Authority, 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:

$$F O\&M_{(LREV)} = O\&M_{(LREF)} * WPI_{(REV)} / 209.470$$

$$F O\&M_{(FREV)} = O\&M_{(FREF)} * US CPI_{(REV)} / 226.889 * ER_{(REV)} / 86.20$$

Where:

- |                         |   |  |
|-------------------------|---|--|
| F O&M <sub>(LREV)</sub> | = | The revised applicable fixed O&M local component of tariff   |
| F O&M <sub>(FREV)</sub> | = | The revised applicable fixed O&M foreign component of tariff indexed with US CPI and exchange rate variation   |
| O&M <sub>(LREF)</sub>   | = | The reference fixed O&M local component of tariff for the relevant period  |
| O&M <sub>(FREF)</sub>   | = | The reference fixed O&M foreign component of tariff for the relevant period  |
| WPI <sub>(REV)</sub>    | = | The revised wholesale price index (manufactures) / alternative index determined by the Authority   |
| WPI <sub>(REF)</sub>    | = | 209.470 wholesale price index (manufactures) of July 2011 notified by the Federal Bureau of Statistics / alternative index determined by the Authority (refer to proceeding note). |
| US CPI <sub>(REV)</sub> | = | The revised US CPI (all urban consumers)   |
| US CPI <sub>(REF)</sub> | = | 226.889 US CPI (all urban consumers) for the month of September 2011 as notified by the US Bureau of Labor Statistics  |
| ER <sub>(REV)</sub>     | = | the revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan   |



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Note: At the time of this determination, the Authority is still in the process of establishing an alternative index for WPI (manufactures) which has been discontinued by the Federal Bureau of Statistics since August 2011. Pending the determination of alternative index by the Authority the last available WPI (Manufactures) for the month of July 2011 has been used as reference. Upon determination of alternative index by the Authority, reference indexation value shall be revised with the alternative index value for the month of September 2011.

ii) Adjustment of insurance component

In case of insurance denominated in US \$, insurance cost component of tariff will be adjusted on account of US\$/PKR exchange rate variation on annual basis. Further, insurance component of the reference tariff will be adjusted as per actually incurred prudent costs, subject to maximum of 1.35% of the EPC cost, on annual basis upon production of authentic documentary evidence by the petitioner.

iii) Return on equity

The return on equity component of tariff will be adjusted on the basis of revised TT & OD selling rate of US Dollar as notified by the National Bank of Pakistan according to the following formula:

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

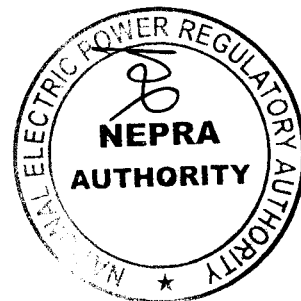
Where:

ROE<sub>(REV)</sub> = Revised return on equity component of tariff expressed in Rs/kWh.

ROE<sub>(REF)</sub> = Reference return on equity component of tariff expressed in Rs/kWh.

ER<sub>(REV)</sub> = The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

ER<sub>(REF)</sub> = The reference TT & OD selling rate of US dollar



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iv) Return on equity during construction

The return on equity during construction component of tariff will be adjusted on the basis of revised TT & OD selling rate of US Dollar as notified by the National Bank of Pakistan according to the following formula:

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

Where:

$ROEDC_{(REV)}$  = Revised return on equity during construction component of tariff expressed in Rs/kWh.

$ROEDC_{(REF)}$  = Reference return on equity during construction component of tariff expressed in Rs/kWh.

$ER_{(REV)}$  = The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

$ER_{(REF)}$  = The reference TT & OD selling rate of US dollar

v) Adjustment for LIBOR/KIBOR variation

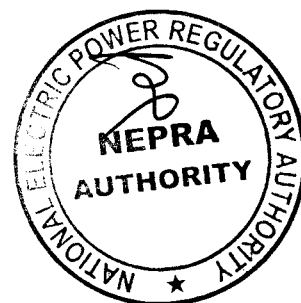
The interest part of fixed charge component will remain unchanged throughout the term except for the adjustment due to variation in 6 months LIBOR/KIBOR, while spread of 4.50% on 6 months LIBOR and 2.95% on 6 months KIBOR remaining the same, according to the following formula:

For foreign financing

$$\Delta I = P_{(REV)} * (LIBOR_{(REV)} - 0.79\%) / 2$$

Where:

$\Delta I$  = the variation in interest charges applicable corresponding to variation in 6 months LIBOR.  $\Delta I$  can be positive or negative depending upon whether 6 months LIBOR  $_{(Rev)}$  per annum > or < 0.79%. The interest payment obligation will be enhanced or reduced to the extent of  $\Delta I$  for each half year under adjustment.



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$P_{(REV)}$  = is the outstanding principal (as indicated in the attached debt service schedule to this order at Annex-II) on a biannual basis at the relevant six monthly calculations date.

For local financing

$$\Delta I = P_{(REV)} * (KIBOR_{(REV)} - 11.93\%) / 2$$

Where:

$\Delta I$  = the variation in interest charges applicable corresponding to variation in 6 months KIBOR.  $\Delta I$  can be positive or negative depending upon whether 6 months KIBOR<sub>(Rev)</sub> per annum > or < 11.93%. The interest payment obligation will be enhanced or reduced to the extent of  $\Delta I$  for each half year under adjustment.

$P_{(REV)}$  = is the outstanding principal (as indicated in the attached debt service schedule to this order at Annex-II) on a biannual basis at the relevant six monthly calculations date.

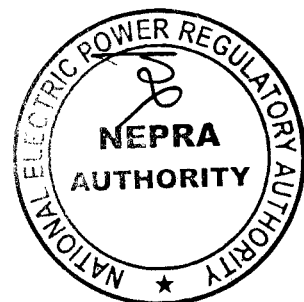
Foreign debt and its interest will also be adjusted on bi-annual basis on account of actual variation in PKR/US \$ over the applicable reference exchange rate.

Note: Adjustments on account of inflation, foreign exchange rate variation, LIBOR/KIBOR variation and actual insurance 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.

#### IV. 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.

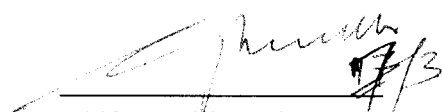
**Emissions Trading/ Carbon Credits:**

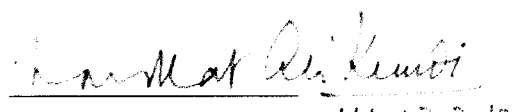
The petitioner shall process and obtain emissions/carbon credits expeditiously and credit the proceeds to the power purchaser as per the GoP Policy for Development of Renewable Energy for Power Generation 2006, as amended from time.

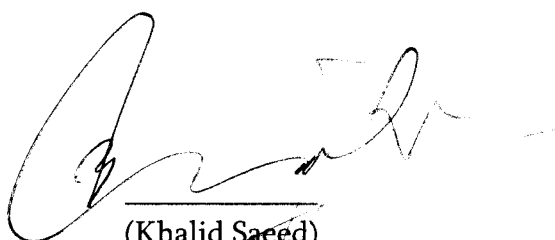
**Other:**

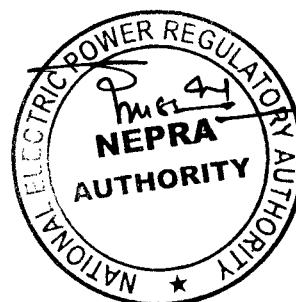
The Authority has allowed/approved only those cost(s), term(s), condition(s), provision(s), etc. which have been specifically approved in this tariff determination. Any cost(s), term(s), condition(s), provision(s), etc. contained in the tariff petition or any other document which are not specifically allowed/approved in this tariff determination, should not be implied to be approved, if not adjudicated upon in this tariff determination.

**AUTHORITY**

  
(Ghiasuddin Ahmed)  
Vice Chairman/Member

  
(Shaukat Ali Kundi) 14.03.2012  
Member

  
(Khalid Saeed)  
Chairman





**FOUNDATION WIND ENERGY - I LIMITED**  
**REFERENCE TARIFF TABLE**

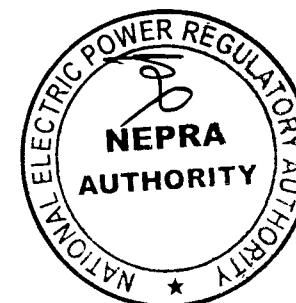
Annex - I

Year	O&M		Insurance	Return on equity	Return on equity during construction	Withholding tax @7.5%	Loan repayment	Interest charges	Tariff
	Local	Foreign							
	Rs. / kWh	Rs. / kWh							
1	0.2931	0.5719	0.6634	3.1919	0.3717	0.2673	3.8402	4.7131	13.9126
2	0.2931	0.5719	0.6634	3.1919	0.3717	0.2673	4.1373	4.4160	13.9126
3	0.3108	1.2700	0.6634	3.1919	0.3717	0.2673	4.4645	4.0888	14.6284
4	0.3108	1.2700	0.6634	3.1919	0.3717	0.2673	4.8255	3.7279	14.6284
5	0.3108	1.2700	0.6634	3.1919	0.3717	0.2673	5.2246	3.3287	14.6284
6	0.3134	1.4166	0.6634	3.1919	0.3717	0.2673	5.6669	2.8865	14.7775
7	0.3134	1.4166	0.6634	3.1919	0.3717	0.2673	6.1579	2.3954	14.7775
8	0.3134	1.4166	0.6634	3.1919	0.3717	0.2673	6.7042	1.8491	14.7775
9	0.3134	1.4166	0.6634	3.1919	0.3717	0.2673	7.3132	1.2402	14.7775
10	0.3134	1.4166	0.6634	3.1919	0.3717	0.2673	7.9934	0.5599	14.7775
11	0.2637	1.4663	0.6634	3.1919	0.3717	0.2673	-	-	6.2242
12	0.2637	1.4663	0.6634	3.1919	0.3717	0.2673	-	-	6.2242
13	0.2637	1.4663	0.6634	3.1919	0.3717	0.2673	-	-	6.2242
14	0.2637	1.4663	0.6634	3.1919	0.3717	0.2673	-	-	6.2242
15	0.2637	1.4663	0.6634	3.1919	0.3717	0.2673	-	-	6.2242
16	0.2637	1.4663	0.6634	3.1919	0.3717	0.2673	-	-	6.2242
17	0.2637	1.4663	0.6634	3.1919	0.3717	0.2673	-	-	6.2242
18	0.2637	1.4663	0.6634	3.1919	0.3717	0.2673	-	-	6.2242
19	0.2637	1.4663	0.6634	3.1919	0.3717	0.2673	-	-	6.2242
20	0.2637	1.4663	0.6634	3.1919	0.3717	0.2673	-	-	6.2242
<b>Levelized</b>	<b>0.2948</b>	<b>1.2228</b>	<b>0.6634</b>	<b>3.1919</b>	<b>0.3717</b>	<b>0.2673</b>	<b>3.8144</b>	<b>2.3589</b>	<b>12.1851</b>

The reference tariff has been calculated on the basis of net annual benchmark energy generation of 144.500 GWh. Net annual generation supplied to the power purchaser in a year, in excess of benchmark energy of 144.500 GWh will be charged at 10% of the prevalent approved tariff.

Exchange rate 1 US \$ = 86.20 PKR

Levelized tariff @ 10% works out to be US cents 14.1359



**FOUNDATION WIND ENERGY - I LIMITED**  
**DEBT SERVICING SCHEDULE**

Period	Local Debt					Foreign Debt					Annual Principal Repayment Rs./kWh	Annual Interest Rs./kWh	Annual Debt Servicing Rs./kWh
	Principal	Repayment	Interest	Balance	Total Debt Service	Principal	Repayment	Interest	Balance	Total Debt Service			
	Million US\$	Million US\$	Million US\$	Million US\$	Million US\$	Million US\$	Million US\$	Million US\$	Million US\$	Million US\$			
1	31.47	0.73	2.34	30.74	3.08	62.95	2.43	1.67	60.52	4.09			
	30.74	0.79	2.29	29.96	3.08	60.52	2.49	1.60	58.03	4.09			
	<b>31.47</b>	<b>1.52</b>	<b>4.63</b>	<b>29.96</b>	<b>6.15</b>	<b>62.95</b>	<b>4.92</b>	<b>3.27</b>	<b>58.03</b>	<b>8.19</b>	<b>3.8402</b>	<b>4.7131</b>	<b>8.5534</b>
2	29.96	0.84	2.23	29.11	3.08	58.03	2.56	1.53	55.47	4.09			
	29.11	0.91	2.17	28.21	3.08	55.47	2.63	1.47	52.85	4.09			
	<b>29.96</b>	<b>1.75</b>	<b>4.40</b>	<b>28.21</b>	<b>6.15</b>	<b>58.03</b>	<b>5.19</b>	<b>3.00</b>	<b>52.85</b>	<b>8.19</b>	<b>4.1373</b>	<b>4.4160</b>	<b>8.5534</b>
3	28.21	0.97	2.10	27.23	3.08	52.85	2.70	1.40	50.15	4.09			
	27.23	1.05	2.03	26.18	3.08	50.15	2.77	1.33	47.38	4.09			
	<b>28.21</b>	<b>2.02</b>	<b>4.13</b>	<b>26.18</b>	<b>6.15</b>	<b>52.85</b>	<b>5.46</b>	<b>2.72</b>	<b>47.38</b>	<b>8.19</b>	<b>4.4645</b>	<b>4.0888</b>	<b>8.5534</b>
4	26.18	1.12	1.95	25.06	3.08	47.38	2.84	1.25	44.54	4.09			
	25.06	1.21	1.87	23.85	3.08	44.54	2.92	1.18	41.63	4.09			
	<b>26.18</b>	<b>2.33</b>	<b>3.82</b>	<b>23.85</b>	<b>6.15</b>	<b>47.38</b>	<b>5.76</b>	<b>2.43</b>	<b>41.63</b>	<b>8.19</b>	<b>4.8255</b>	<b>3.7279</b>	<b>8.5534</b>
5	23.85	1.30	1.78	22.55	3.08	41.63	2.99	1.10	38.63	4.09			
	22.55	1.40	1.68	21.16	3.08	38.63	3.07	1.02	35.56	4.09			
	<b>23.85</b>	<b>2.69</b>	<b>3.46</b>	<b>21.16</b>	<b>6.15</b>	<b>41.63</b>	<b>6.06</b>	<b>2.12</b>	<b>35.56</b>	<b>8.19</b>	<b>5.2246</b>	<b>3.3287</b>	<b>8.5534</b>
6	21.16	1.50	1.58	19.66	3.08	35.56	3.15	0.94	32.41	4.09			
	19.66	1.61	1.46	18.05	3.08	32.41	3.24	0.86	29.17	4.09			
	<b>21.16</b>	<b>3.11</b>	<b>3.04</b>	<b>18.05</b>	<b>6.15</b>	<b>35.56</b>	<b>6.39</b>	<b>1.80</b>	<b>29.17</b>	<b>8.19</b>	<b>5.6669</b>	<b>2.8865</b>	<b>8.5534</b>
7	18.05	1.73	1.34	16.32	3.08	29.17	3.32	0.77	25.85	4.09			
	16.32	1.86	1.22	14.46	3.08	25.85	3.41	0.68	22.44	4.09			
	<b>18.05</b>	<b>3.59</b>	<b>2.56</b>	<b>14.46</b>	<b>6.15</b>	<b>29.17</b>	<b>6.73</b>	<b>1.46</b>	<b>22.44</b>	<b>8.19</b>	<b>6.1579</b>	<b>2.3954</b>	<b>8.5534</b>
8	14.46	2.00	1.08	12.46	3.08	22.44	3.50	0.59	18.94	4.09			
	12.46	2.15	0.93	10.31	3.08	18.94	3.59	0.50	15.35	4.09			
	<b>14.46</b>	<b>4.15</b>	<b>2.01</b>	<b>10.31</b>	<b>6.15</b>	<b>22.44</b>	<b>7.09</b>	<b>1.09</b>	<b>15.35</b>	<b>8.19</b>	<b>6.7042</b>	<b>1.8491</b>	<b>8.5534</b>
9	10.31	2.31	0.77	8.00	3.08	15.35	3.69	0.41	11.66	4.09			
	8.00	2.48	0.60	5.53	3.08	11.66	3.79	0.31	7.87	4.09			
	<b>10.31</b>	<b>4.79</b>	<b>1.36</b>	<b>5.53</b>	<b>6.15</b>	<b>15.35</b>	<b>7.47</b>	<b>0.71</b>	<b>7.87</b>	<b>8.19</b>	<b>7.3132</b>	<b>1.2402</b>	<b>8.5534</b>
10	5.53	2.66	0.41	2.86	3.08	7.87	3.89	0.21	3.99	4.09			
	2.86	2.86	0.21	0.00	3.08	3.99	3.99	0.11	0.00	4.09			
	<b>6.15</b>	<b>5.53</b>	<b>0.62</b>	<b>0.62</b>	<b>6.15</b>	<b>8.19</b>	<b>7.87</b>	<b>0.31</b>	<b>0.31</b>	<b>8.19</b>	<b>7.9934</b>	<b>0.5599</b>	<b>8.5534</b>

