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-156/FFCEL-2010/1560-1562
August 10, 2010

Subject: **Determination of the Authority in the Matter of Tariff Petition filed by FFC Energy Ltd. [Case # NEPRA/TRF-156/FFCEL-2010]**
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 the subject Determination of the Authority along with Annexure-I, II & III (31 pages) in Case No. NEPRA/TRF-156/FFCEL-2010.

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 18 of the Determination relating to the reference tariff, adjustments & indexation along with Annexure-I, II & III needs to be notified in the official Gazette. The Order is reproduced for the purpose of clarity and is attached herewith.

Enclosure: As above

(Syed Safeer Hussain)

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

CC:
1. Secretary, Cabinet Division, Cabinet Block, Islamabad.
2. Secretary, Ministry of Finance, Islamabad.

ORDER OF THE AUTHORITY
IN CASE NO. NEPRA/TRF-156/FFCEL-2010
TO BE NOTIFIED IN THE OFFICIAL GAZETTE

Pursuant to Rule 6 of the NEPRA Licensing (Generation) Rules, 2000, FFC Energy Limited (FFCEL) 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 3-5 Rs/kWh	Year 6-10 Rs/kWh	Year 11-20 Rs/kWh	Indexation
Fixed O&M Local	0.4504	0..9791	0.7678	0.7678	WPI
Fixed O&M Foreign	0.1930	0.4196	0.3290	0.3290	PKR/US$, US CPI
Insurance	0.6582	0.6582	0.6582	0.6582	PKR/US$
Debt Service	12.5637	12.5637	12.5637	0	KIBOR
Return on Equity	2.6879	2.6879	2.6879	2.6879	PKR/US$
Total	16.5532	17.3085	17.0066	4.4429	

i) The reference tariff has been calculated on the basis of net annual production of 143.600 GWh at annual net plant capacity factor of 33.12%.

ii) The above charges will be limited to the extent of net annual energy production of 143.600 GWh. Net annual production in excess of 143.600 GWh will be charged at 10% of the tariff for that particular year.

iii) In the above tariff no adjustment for Carbon Emission Receipts (CERs) 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 Generation, 2006.

iv) The reference PKR/Dollar rate has been assumed at 85.00.

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

vi) The monthly benchmark energy production table along with monthly power curves is attached herewith as Annex-I

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

viii) Debt Servicing Schedule is attached as Annex-III

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

The following indexations shall be applicable to the reference tariff;

I. One Time Adjustment

a. The Principal repayment and the cost of debt shall be adjusted at Financial Close as per the actual borrowing composition.

b. Interest During Construction (IDC) shall be adjusted at COD as per actual based on actual disbursement of loans and prevailing KIBOR rates during the project construction period.

c. The Reference tariff table shall be revised at COD while taking into account the above adjustments. The Petitioner will submit its request to the Authority within 15 days of COD for necessary adjustment 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 may be reimbursed by CPPA to the Petitioner on production of original receipts. This payment may 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 may 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 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 15% return on equity according to the following formula:

Withholding Tax Payable	=	$[\{15\% * (E_{(Ref)} - E_{(Red)}\} \times 7.5\%]$
Where:		
$E_{(Ref)}$	=	Reference Equity (US$ 26.7115 million x 85)
$E_{(Red)}$	=	Equity Redeemed

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.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

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 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 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 in accordance with the standard practice adopted by the power purchaser. The mode of indexation will be as follows:

$$F\ O\&M_{(LREV)} = O\&M_{(LREF)} * WPI_{(REV)} / 168.82$$

$$F\ O\&M_{(FREV)} = O\&M_{(FREF)} * US\ CPI_{(REV)} / 217.965 * ER_{(REV)} / 85$$

Where:

$F\ O\&M_{(LREV)}$	=	The revised applicable Fixed O&M local component of the Fixed Charges indexed with WPI
$FO\&M_{(FREV)}$	=	The revised applicable Fixed O&M foreign component of the Fixed Charges indexed with US CPI and currency fluctuation
$FO\&M_{(FREF)}$	=	The reference fixed O&M foreign component of the Fixed Charges for the relevant period.
$FO\&M_{(LREF)}$	=	The reference fixed O&M local component of the Fixed Charges for the relevant period
$WPI_{(REV)}$	=	The Revised wholesale Price Index (Manufactures)
$WPI_{(REF)}$	=	168.82, Reference wholesale price index (manufactures) of June 2010 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.
$US\ CPI_{(REF)}$	=	217.965, Reference US CPI notified by the Bureau of Labor Statistics (All Urban Consumers) for the month of June 2010.
$ER_{(REV)}$	=	The Revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

ii) Adjustment for KIBOR variation

The interest part of fixed charge component will remain unchanged throughout the term except for the adjustment due to variations in interest rate as a result of 6-monthly variation in KIBOR while spread on KIBOR (2.95%) remaining the same according to the following formula:

$\Delta I = P_{(REV)} * (KIBOR_{(REV)} - 12.38\%) / 2$

Where:

ΔI	=	The variation in interest charges applicable corresponding to variation in 6-month KIBOR. Δ I can be positive or negative depending upon whether $KIBOR_{(Rev)}$ > or < 12.38%. 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 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.

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
$ROR_{(REF}$	=	The reference ROE component of the tariff expressed in Rs/kWh
$ER_{(REV)}$	=	The revised US$/PKR exchange rate as notified by the National Bank of Pakistan
$ER_{(REF)}$	=	The reference exchange rate of PKR 85=1 US$

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Note:

Adjustment on account of inflation, local inflation, US CPI, foreign exchange variation and 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.

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 for record of data.

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 would process and obtain emissions/carbon credits expeditiously and credit the proceeds to the Power Purchaser as per the policy issued by the Federal Government.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

FFCEL 49.5 MW WIND POWER PROJECT

BENCHMARK ENERGY PRODUCTION TABLE

Months	Benchmark Wind Speed m/s	Benchmark Energy GWh
January	5.2	4.9
February	5.6	6.2
March	5.9	7.5
April	7.8	13.5
May	9.9	22.1
June	10.3	21.4
July	10.4	22.8
August	9.6	19.8
September	8	14.0
October	5.2	4.6
November	4.4	2.8
December	4.9	3.9
Mean of Months	7.3	12.0
Annual Energy		143.6

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

FFCEL 49.5 MW Wind Power Project

Monthlty Complex Power Curves

Wind Speed m/s	Energy Production Estimates - GWh											
	January	February	March	April	May	June	July	August	September	October	November	December
3.0	0.6	0.7	0.7	0.4	0.3	0.4	0.4	0.4	0.4	0.5	0.6	0.5
3.1	0.7	0.9	0.8	0.5	0.4	0.5	0.4	0.5	0.5	0.6	0.7	0.6
3.2	0.8	1.0	0.9	0.6	0.5	0.6	0.5	0.6	0.6	0.7	0.8	0.7
3.3	0.9	1.1	1.0	0.7	0.5	0.7	0.6	0.7	0.6	0.8	0.9	0.8
3.4	1.0	1.2	1.2	0.8	0.7	0.8	0.7	0.8	0.8	0.9	1.1	0.9
3.5	1.2	1.4	1.3	1.0	0.8	0.9	0.9	0.9	0.9	1.1	1.2	1.1
3.6	1.3	1.5	1.5	1.1	0.9	1.0	1.0	1.0	1.0	1.2	1.3	1.2
3.7	1.5	1.7	1.6	1.2	1.0	1.1	1.1	1.1	1.1	1.3	1.5	1.4
3.8	1.6	1.9	1.8	1.4	1.1	1.3	1.3	1.3	1.3	1.5	1.7	1.5
3.9	1.8	2.1	2.0	1.5	1.3	1.4	1.4	1.4	1.4	1.6	1.8	1.7
4.0	2.0	2.2	2.2	1.7	1.4	1.6	1.6	1.6	1.6	1.8	2.0	1.9
4.1	2.2	2.4	2.4	1.9	1.6	1.8	1.7	1.8	1.7	2.0	2.2	2.0
4.2	2.4	2.6	2.6	2.1	1.8	1.9	1.9	2.0	1.9	2.2	2.4	2.2
4.3	2.6	2.9	2.8	2.2	2.0	2.1	2.1	2.1	2.1	2.4	2.6	2.4
4.4	2.8	3.1	3.1	2.4	2.2	2.3	2.3	2.3	2.3	2.6	2.8	2.7
4.5	3.0	3.3	3.3	2.6	2.4	2.5	2.5	2.5	2.5	2.8	3.1	2.9
4.6	3.3	3.6	3.5	2.9	2.6	2.7	2.7	2.8	2.7	3.0	3.3	3.1
4.7	3.5	3.8	3.8	3.1	2.8	2.9	2.9	3.0	2.9	3.3	3.5	3.4
4.8	3.8	4.0	4.1	3.3	3.0	3.2	3.2	3.2	3.1	3.5	3.8	3.6
4.9	4.1	4.3	4.3	3.6	3.2	3.4	3.4	3.5	3.4	3.8	4.0	3.9
5.0	4.4	4.6	4.6	3.8	3.5	3.7	3.6	3.7	3.6	4.0	4.3	4.1
5.1	4.6	4.8	4.9	4.1	3.7	3.9	3.9	4.0	3.9	4.3	4.6	4.4
5.2	4.9	5.1	5.2	4.4	4.0	4.2	4.2	4.2	4.1	4.6	4.9	4.7
5.3	5.3	5.4	5.5	4.7	4.3	4.5	4.5	4.5	4.4	4.9	5.2	5.0
5.4	5.6	5.6	5.8	4.9	4.5	4.7	4.7	4.8	4.7	5.2	5.5	5.3
5.5	5.9	5.9	6.1	5.2	4.8	5.0	5.0	5.1	5.0	5.5	5.8	5.7
5.6	6.2	6.2	6.5	5.6	5.1	5.3	5.4	5.4	5.3	5.8	6.1	6.0
5.7	6.6	6.5	6.8	5.9	5.4	5.6	5.7	5.7	5.6	6.1	6.4	6.3
5.8	6.9	6.8	7.1	6.2	5.8	5.9	6.0	6.0	5.9	6.4	6.7	6.7
5.9	7.3	7.1	7.5	6.5	6.1	6.3	6.3	6.4	6.2	6.7	7.0	7.0
6.0	7.6	7.4	7.8	6.9	6.4	6.6	6.7	6.7	6.5	7.1	7.3	7.4
6.1	8.0	7.7	8.2	7.2	6.8	6.9	7.1	7.1	6.9	7.4	7.7	7.7
6.2	8.3	7.9	8.5	7.6	7.2	7.3	7.4	7.4	7.2	7.7	8.0	8.1
6.3	8.7	8.2	8.9	7.9	7.5	7.6	7.8	7.8	7.6	8.1	8.3	8.5
6.4	9.1	8.5	9.2	8.3	7.9	8.0	8.2	8.1	7.9	8.4	8.6	8.8
6.5	9.4	8.8	9.6	8.7	8.3	8.3	8.6	8.5	8.3	8.8	9.0	9.2
6.6	9.8	9.1	9.9	9.0	8.7	8.7	9.0	8.9	8.7	9.2	9.3	9.6

FFCEL 49.5 MW Wind Power Project

Monthlty Complex Power Curves

Wind Speed m/s	Energy Production Estimates - GWh											
	January	February	March	April	May	June	July	August	September	October	November	December
6.7	10.2	9.4	10.3	9.4	9.1	9.1	9.4	9.3	9.1	9.5	9.6	10.0
6.8	10.6	9.7	10.6	9.8	9.5	9.4	9.8	9.6	9.4	9.9	10.0	10.4
6.9	10.9	9.9	11.0	10.2	9.9	9.8	10.2	10.0	9.8	10.2	10.3	10.7
7.0	11.3	10.2	11.3	10.6	10.4	10.2	10.6	10.4	10.2	10.6	10.6	11.1
7.1	11.7	10.5	11.7	10.9	10.8	10.6	11.0	10.8	10.6	10.9	10.9	11.5
7.2	12.0	10.8	12.0	11.3	11.2	11.0	11.4	11.2	11.0	11.3	11.3	11.9
7.3	12.4	11.0	12.4	11.7	11.7	11.3	11.9	11.6	11.3	11.6	11.6	12.3
7.4	12.7	11.3	12.7	12.1	12.1	11.7	12.3	12.0	11.7	12.0	11.9	12.6
7.5	13.1	11.6	13.0	12.4	12.5	12.1	12.7	12.4	12.1	12.3	12.2	13.0
7.6	13.5	11.8	13.4	12.8	13.0	12.5	13.1	12.8	12.5	12.7	12.5	13.4
7.7	13.8	12.1	13.7	13.2	13.4	12.9	13.5	13.2	12.9	13.0	12.8	13.7
7.8	14.1	12.4	14.0	13.5	13.9	13.3	14.0	13.5	13.3	13.4	13.1	14.1
7.9	14.5	12.6	14.3	13.9	14.3	13.6	14.4	13.9	13.6	13.7	13.4	14.5
8.0	14.8	12.9	14.7	14.2	14.8	14.0	14.8	14.3	14.0	14.0	13.7	14.8
8.1	15.1	13.1	15.0	14.6	15.2	14.4	15.2	14.7	14.4	14.4	14.0	15.2
8.2	15.5	13.3	15.3	14.9	15.6	14.8	15.6	15.1	14.7	14.7	14.3	15.5
8.3	15.8	13.6	15.6	15.3	16.1	15.1	16.0	15.4	15.1	15.0	14.6	15.8
8.4	16.1	13.8	15.9	15.6	16.5	15.5	16.4	15.8	15.4	15.3	14.9	16.2
8.5	16.4	14.0	16.1	15.9	16.9	15.9	16.8	16.2	15.8	15.6	15.1	16.5
8.6	16.7	14.3	16.4	16.2	17.4	16.2	17.2	16.5	16.1	15.9	15.4	16.8
8.7	17.0	14.5	16.7	16.5	17.8	16.6	17.5	16.9	16.5	16.2	15.7	17.1
8.8	17.3	14.7	17.0	16.8	18.2	16.9	17.9	17.2	16.8	16.5	15.9	17.4
8.9	17.6	14.9	17.2	17.1	18.6	17.3	18.3	17.6	17.1	16.8	16.2	17.7
9.0	17.9	15.1	17.5	17.4	19.0	17.6	18.6	17.9	17.4	17.1	16.4	18.0
9.1	18.2	15.3	17.7	17.7	19.3	17.9	19.0	18.3	17.8	17.3	16.7	18.3
9.2	18.4	15.5	18.0	18.0	19.7	18.3	19.3	18.6	18.1	17.6	16.9	18.6
9.3	18.7	15.7	18.2	18.3	20.1	18.6	19.6	18.9	18.4	17.9	17.2	18.9
9.4	19.0	15.9	18.4	18.5	20.4	18.9	20.0	19.2	18.7	18.1	17.4	19.2
9.5	19.2	16.1	18.7	18.8	20.8	19.2	20.3	19.5	19.0	18.4	17.6	19.5
9.6	19.5	16.3	18.9	19.1	21.1	19.5	20.6	19.8	19.2	18.6	17.8	19.7
9.7	19.7	16.4	19.1	19.3	21.5	19.8	20.9	20.1	19.5	18.9	18.0	20.0
9.8	19.9	16.6	19.3	19.6	21.8	20.1	21.2	20.4	19.8	19.1	18.3	20.2
9.9	20.2	16.8	19.5	19.8	22.1	20.3	21.5	20.7	20.0	19.3	18.5	20.5
10.0	20.4	17.0	19.7	20.0	22.4	20.6	21.7	21.0	20.3	19.6	18.7	20.7
10.1	20.6	17.1	19.9	20.3	22.7	20.9	22.0	21.2	20.5	19.8	18.9	20.9
10.2	20.8	17.3	20.1	20.5	23.0	21.1	22.3	21.5	20.8	20.0	19.0	21.2
10.3	21.1	17.4	20.2	20.7	23.3	21.4	22.5	21.8	21.0	20.2	19.2	21.4

Annex-II

FFC Energy Limited
REFERENCE TARIFF

Year	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	0.4504	0.1930	0.6582	2.6879	0.2016	2.9782	9.5855	16.7548
2	0.4504	0.1930	0.6582	2.6879	0.2016	3.4523	9.1114	16.7548
3	0.9791	0.4196	0.6582	2.6879	0.2016	4.0018	8.5619	17.5101
4	0.9791	0.4196	0.6582	2.6879	0.2016	4.6388	7.9249	17.5101
5	0.9791	0.4196	0.6582	2.6879	0.2016	5.3772	7.1865	17.5101
6	0.7678	0.3290	0.6582	2.6879	0.2016	6.2331	6.3306	17.2082
7	0.7678	0.3290	0.6582	2.6879	0.2016	7.2253	5.3384	17.2082
8	0.7678	0.3290	0.6582	2.6879	0.2016	8.3754	4.1883	17.2082
9	0.7678	0.3290	0.6582	2.6879	0.2016	9.7085	2.8552	17.2082
10	0.7678	0.3290	0.6582	2.6879	0.2016	11.2539	1.3098	17.2082
11	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
12	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
13	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
14	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
15	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
16	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
17	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
18	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
19	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
20	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
Levelized Tariff	**0.7541**	**0.3232**	**0.6582**	**2.6879**	**0.2016**	**4.0716**	**4.9961**	**13.6927**

Exchange Rate Used= 1 US$ = Rupees 85.00, Levelized tariff discounted at 10% per annum works out to be US cents 16.1090/kWh.

* ***The above rate is limited to an annual energy production up to 143.600 GWh. Any generated energy beyond 143.600 GWh in a year will be charged at 10% of the Reference Tariff for that year.***

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

FFCEL 49.5 MW Wind Power Project

Monthlty Complex Power Curves

Wind Speed m/s	Energy Production Estimates - GWh											
	January	February	March	April	May	June	July	August	September	October	November	December
10.4	21.3	17.6	20.4	20.9	23.6	21.6	22.8	22.0	21.3	20.4	19.4	21.6
10.5	21.5	17.7	20.6	21.1	23.8	21.9	23.0	22.3	21.5	20.6	19.6	21.8
10.6	21.7	17.9	20.8	21.3	24.1	22.1	23.3	22.5	21.7	20.8	19.8	22.0
10.7	21.9	18.0	20.9	21.5	24.3	22.3	23.5	22.7	21.9	21.0	19.9	22.2
10.8	22.1	18.1	21.1	21.7	24.6	22.6	23.7	23.0	22.1	21.2	20.1	22.4
10.9	22.2	18.2	21.2	21.9	24.8	22.8	23.9	23.2	22.3	21.4	20.3	22.6
11.0	22.4	18.4	21.4	22.0	25.0	23.0	24.1	23.4	22.5	21.6	20.4	22.8
11.1	22.6	18.5	21.5	22.2	25.3	23.2	24.3	23.6	22.7	21.7	20.6	23.0
11.2	22.8	18.6	21.7	22.4	25.5	23.4	24.5	23.8	22.9	21.9	20.7	23.2
11.3	22.9	18.7	21.8	22.6	25.7	23.6	24.7	24.0	23.1	22.1	20.9	23.4
11.4	23.1	18.8	21.9	22.7	25.9	23.8	24.9	24.2	23.3	22.2	21.0	23.5
11.5	23.3	18.9	22.0	22.9	26.1	23.9	25.1	24.4	23.4	22.4	21.1	23.7
11.6	23.4	19.0	22.2	23.0	26.3	24.1	25.3	24.5	23.6	22.5	21.3	23.9
11.7	23.6	19.1	22.3	23.2	26.5	24.3	25.5	24.7	23.8	22.7	21.4	24.0
11.8	23.7	19.2	22.4	23.3	26.6	24.4	25.6	24.9	23.9	22.8	21.5	24.2
11.9	23.9	19.3	22.5	23.5	26.8	24.6	25.8	25.1	24.1	22.9	21.6	24.3
12.0	24.0	19.3	22.6	23.6	27.0	24.7	26.0	25.2	24.2	23.1	21.7	24.5
12.1	24.1	19.4	22.7	23.7	27.1	24.9	26.1	25.4	24.4	23.2	21.8	24.6
12.2	24.2	19.5	22.8	23.9	27.3	25.0	26.3	25.5	24.5	23.3	21.9	24.7
12.3	24.4	19.5	22.9	24.0	27.4	25.2	26.4	25.7	24.7	23.4	22.0	24.9
12.4	24.5	19.6	23.0	24.1	27.6	25.3	26.5	25.8	24.8	23.5	22.1	25.0
12.5	24.6	19.7	23.1	24.2	27.7	25.4	26.7	25.9	24.9	23.6	22.2	25.1
12.6	24.7	19.7	23.1	24.3	27.8	25.6	26.8	26.1	25.1	23.7	22.3	25.2
12.7	24.8	19.8	23.2	24.5	28.0	25.7	26.9	26.2	25.2	23.8	22.4	25.3
12.8	24.9	19.8	23.3	24.6	28.1	25.8	27.1	26.3	25.3	23.9	22.4	25.4
12.9	25.0	19.8	23.3	24.7	28.2	25.9	27.2	26.4	25.4	24.0	22.5	25.5
13.0	25.1	19.9	23.4	24.8	28.3	26.0	27.3	26.5	25.5	24.1	22.6	25.6
13.1	25.1	19.9	23.5	24.8	28.5	26.1	27.4	26.6	25.6	24.2	22.6	25.7
13.2	25.2	19.9	23.5	24.9	28.6	26.2	27.5	26.7	25.7	24.3	22.7	25.8
13.3	25.3	20.0	23.6	25.0	28.7	26.3	27.6	26.8	25.8	24.3	22.7	25.9
13.4	25.3	20.0	23.6	25.1	28.8	26.4	27.7	26.9	25.9	24.4	22.8	26.0
13.5	25.4	20.0	23.7	25.2	28.9	26.4	27.8	27.0	26.0	24.5	22.8	26.0
13.6	25.4	20.0	23.7	25.2	29.0	26.5	27.9	27.1	26.1	24.5	22.9	26.1
13.7	25.5	20.0	23.7	25.3	29.1	26.6	28.0	27.2	26.2	24.6	22.9	26.2
13.8	25.5	20.0	23.7	25.4	29.2	26.6	28.1	27.3	26.3	24.6	22.9	26.2
13.9	25.5	20.0	23.8	25.4	29.2	26.7	28.2	27.3	26.3	24.7	22.9	26.3
14.0	25.6	20.1	23.8	25.5	29.3	26.8	28.3	27.4	26.4	24.7	23.0	26.3

FFCEL 49.5 MW Wind Power Project

Monthlty Complex Power Curves

Wind Speed m/s	Energy Production Estimates - GWh											
	January	February	March	April	May	June	July	August	September	October	November	December
14.1	25.6	20.0	23.8	25.5	29.4	26.8	28.4	27.4	26.5	24.7	23.0	26.3
14.2	25.6	20.0	23.8	25.6	29.5	26.9	28.4	27.5	26.5	24.7	23.0	26.4
14.3	25.6	20.0	23.8	25.6	29.6	26.9	28.5	27.6	26.6	24.8	23.0	26.4
14.4	25.6	20.0	23.8	25.6	29.6	27.0	28.6	27.6	26.6	24.8	23.0	26.4
14.5	25.6	20.0	23.8	25.7	29.7	27.0	28.6	27.6	26.6	24.8	23.0	26.4
14.6	25.6	20.0	23.8	25.7	29.8	27.0	28.7	27.7	26.7	24.8	23.0	26.4
14.7	25.6	20.0	23.8	25.7	29.8	27.1	28.7	27.7	26.7	24.8	23.0	26.4
14.8	25.6	20.0	23.7	25.7	29.9	27.1	28.8	27.7	26.7	24.8	23.0	26.4
14.9	25.6	19.9	23.7	25.7	29.9	27.1	28.8	27.8	26.8	24.8	22.9	26.4
15.0	25.6	19.9	23.7	25.7	30.0	27.1	28.9	27.8	26.8	24.8	22.9	26.4

Note : For Average Monthly Wind speed values above 15 m / s, the Energy Production values shall be same as for 15 m /s

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Annex-III

FFC Energy Limited

Debt Servicing Schedule

Kibor=12.38%, Premium=2.95%

Period	Local Debt					Annual Principal Repayment Rs./kWh	Annual Interest Rs./kWh	Annual Debt Servicing Rs./kWh
	Principal Million $	Repayment Million $	Mark-Up Million $	Balance Million $	Debt Service Million $			
	106.8460	2.4229	8.1897	104.4231	10.6126			
	104.4231	2.6086	8.0040	101.8145	10.6126			
1	106.8460	5.0315	16.1938	101.8145	21.2253	2.9782	9.5855	12.5637
	101.8145	2.8085	7.8041	99.0060	10.6126			
	99.0060	3.0238	7.5888	95.9822	10.6126			
2	101.8145	5.8324	15.3929	95.9822	21.2253	3.4523	9.1114	12.5637
	95.9822	3.2556	7.3570	92.7266	10.6126			
	92.7266	3.5051	7.1075	89.2214	10.6126			
3	95.9822	6.7607	14.4645	89.2214	21.2253	4.0018	8.5619	12.5637
	89.2214	3.7738	6.8388	85.4476	10.6126			
	85.4476	4.0631	6.5496	81.3846	10.6126			
4	89.2214	7.8369	13.3884	81.3846	21.2253	4.6388	7.9249	12.5637
	81.3846	4.3745	6.2381	77.0101	10.6126			
	77.0101	4.7098	5.9028	72.3003	10.6126			
5	81.3846	9.0843	12.1409	72.3003	21.2253	5.3772	7.1865	12.5637
	72.3003	5.0708	5.5418	67.2294	10.6126			
	67.2294	5.4595	5.1531	61.7700	10.6126			
6	72.3003	10.5303	10.6950	61.7700	21.2253	6.2331	6.3306	12.5637
	61.7700	5.8780	4.7347	55.8920	10.6126			
	55.8920	6.3285	4.2841	49.5635	10.6126			
7	61.7700	12.2065	9.0188	49.5635	21.2253	7.2253	5.3384	12.5637
	49.5635	6.8136	3.7990	42.7499	10.6126			
	42.7499	7.3358	3.2768	35.4141	10.6126			
8	49.5635	14.1494	7.0758	35.4141	21.2253	8.3754	4.1883	12.5637
	35.4141	7.8981	2.7145	27.5159	10.6126			
	27.5159	8.5035	2.1091	19.0124	10.6126			
9	35.4141	16.4017	4.8236	19.0124	21.2253	9.7085	2.8552	12.5637
	19.0124	9.1553	1.4573	9.8571	10.6126			
	9.8571	9.8571	0.7555	(0.0000)	10.6126			
10	19.0124	19.0124	2.2128	(0.0000)	21.2253	11.2539	1.3098	12.5637

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
(NEPRA)
***

NO. NEPRA/TRF-156/FFCEL-2010

DETERMINATION

OF

TARIFF PETITION

Filed by

FFC ENERGY LIMITED
(FFCEL)

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
(NEPRA)

***

Case No. NEPRA/TRF-156/FFCEL-2010
July_____, 2010

Petitioner

FFC Energy Limited (FFCEL), 93 - Hareley Street Rawalpindi

Authority

Zafar Ali Khan
Member

3/8/10

Maqbool Ahmad Khawaja
Member

6/8.
Ad. note of concerns attached.

Shaukat Ali Kundi
Member

05.08.2010

Ghiasuddin Ahmed
Vice Chairman/Member

Khalid Saeed
Chairman

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Determination of the Authority in the matter of Tariff Petition filed by FFC Energy Limited (Case No. NEPRA/TRF-156/FFCEL-2010

FFC Energy Limited (hereinafter referred to as "FFCEL") filed a Tariff Petition (hereinafter referred to as "the Petition") under Rule 3 of the National Electric Power Regulatory Authority Tariff (Standard and Procedure) Rules, 1998 (hereinafter referred to as "the Tariff Rules") on April 07, 2010 for determination of generation tariff in respect of its 49.5 MW Wind Power Project to be located at Jhampir District Thatta in the Province of Sindh.

Submissions of the Petitioner

2. The summary of technical and financial aspects of the Petition is given hereunder.

- FFC Energy Limited (the Project Company) is a special purpose public limited company which has been established and set up under the laws of Pakistan and is incorporated under the Companies Ordinance 1984.

- In light of the approval of the Project Feasibility Study in accordance with the Renewable Energy Policy 2006, the Feasibility Study Approval Letter and the compliance by FFC, as the sponsor of the Project Company, and the Project Company of all requirements under the RE Policy 2006 for eligibility of a petition for the tariff and following approval of Project Company's Reference Generation Tariff by NEPRA through this Tariff Petition, the Project Company will finance, design, engineer, procure, construct, install, test, complete, commission, insure, operate and maintain a 49.5 MW power generation facility (the Facility) at Jhampir, District Thatta, Sindh (the Project).

3. FFCEL has submitted the following information with respect to its wind power project.

Project Company	FFC Energy Limited
Main Sponsors	Fauji Fertilizer Company Limited (FFC)
Project Capacity	49.5 MW
Project Location	Jhampir, District Thatta, Province of Sindh, Pakistan
Land Area	1,283 Acres
Concession Period	20 years from Commercial Operations Date (COD)
Power Purchaser	National Transmission and Despatch Company Limited (through Central Power Purchasing Agency)

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

<table>
<tr><td>Wind Turbines</td><td>Nordex S77, 1.5 MW HCV x 33 WTGs</td></tr>
<tr><td>Energy Production Estimate</td><td>144.1 GWh per annum (except for first year of operations when the annual Energy Production will be 140.308 GWh)</td></tr>
<tr><td>EPC Contractor</td><td>Consortium of Nordex and Descon, with Nordex as the Lead Contractor</td></tr>
<tr><td>Project Capital Cost</td><td>(US$ in '000)<table><tr><td></td><td>Amount</td></tr><tr><td>EPC Price</td><td>112,979</td></tr><tr><td>Non-EPC Cost</td><td>2,848</td></tr><tr><td>Project Development Cost</td><td>3,721</td></tr><tr><td>Land Costs</td><td>245</td></tr><tr><td>Duties & Taxes</td><td>693</td></tr><tr><td>Insurance during Construction</td><td>2,187</td></tr><tr><td>Financial Charges</td><td>3,102</td></tr><tr><td>Interest During Construction</td><td>11,922</td></tr><tr><td>Total Project Cost (CAPEX)</td><td>137,697</td></tr></table></td></tr>
<tr><td>Funding Plan</td><td>Debt 80% : Equity 20%</td></tr>
<tr><td>Equity</td><td>US$ 27.5 million</td></tr>
<tr><td>Long Term Debt</td><td>US$ 110.2 million</td></tr>
<tr><td>Lenders</td><td>A consortium of local financial institutions</td></tr>
<tr><td>Lead Arrangers</td><td>MCB Bank, National Bank of Pakistan, Habib Bank Limited, Allied Bank Limited, Faysal Bank Limited and Bank Al-Falah Limited</td></tr>
<tr><td>Terms of Long Term Debt</td><td><table><tr><td>Currency</td><td>Pakistan Rupees</td></tr><tr><td>Term</td><td>Upto 12 years (door to door)</td></tr><tr><td>Grace Period</td><td>Upto 24 months</td></tr><tr><td>Repayment Period</td><td>10 years</td></tr><tr><td>Debt Repayment</td><td>In equal semi-annual installments</td></tr><tr><td>Interest Rate</td><td>6 months KIBOR plus 295 basis</td></tr></table></td></tr>
</table>

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

<table>
<tr><td></td><td>points</td></tr>
<tr><td>O&M Contractor</td><td>Consortium of Nordex and Descon, with Nordex as the Lead Contractor</td></tr>
<tr><td>Project Operation Cost</td><td>(US$ in '000)
<table>
<tr><td></td><td>Year 1 – 2</td><td>Year 3 – 20</td></tr>
<tr><td>O&M Cost</td><td>1,642</td><td>2,760</td></tr>
<tr><td>Insurance Cost</td><td>1,112</td><td>1,112</td></tr>
<tr><td>Total Operating Cost</td><td>2,754</td><td>3,872</td></tr>
</table></td></tr>
<tr><td>Levelized Tariff</td><td>US¢ 17.8951 per kWh or Rs.15.2108/kWh at US$/PKR=85.0</td></tr>
<tr><td>Concession Documents</td><td>• Energy Purchase Agreement with the Power Purchaser
• Implementation Agreement with the Government of Pakistan
• Government of Pakistan Guarantee</td></tr>
<tr><td>Applicable GOP Policy</td><td>Policy for Development of Renewable Energy for Power Generation 2006</td></tr>
<tr><td>Technical Advisors</td><td>Lahmeyer International, Germany</td></tr>
<tr><td>Financial Advisors</td><td>Bridge Factor</td></tr>
<tr><td>Legal Counsel</td><td>Haidermota and Co.</td></tr>
<tr><td>Current Status of the Project</td><td>Major Tasks Completed
✓ Executed EPC & O&M agreements ✓ Executed term sheet with Project lenders ✓ Negotiated IA & EPA
✓ Feasibility Study ✓ Wind Resource Assessment Study ✓ Topographical Study</td></tr>
</table>

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

	✓ Transportation Study	✓ Geo-technical Study	✓ Electrical grid study
	✓ Design of wind farm	✓ Environmental impact assessment	

4. The Petition was admitted by the Authority on April 15, 2010 in terms of Rule 4 of the Tariff Rules. Subsequent to the admission of the Petition and in compliance with the provisions of sub-rule 5 of Rule 4 of the Tariff Rules, notices for admission were sent to the parties which were considered to be affected or interested. The Authority also cause to be published in the national daily newspapers a Notice for Admission as well as the public hearing of the Petition in terms of sub-rule (6) of Rule 4 and sub-rule (4) of Rule 9 of the Tariff Rules respectively, inviting thereby all the stakeholders, interested/affected persons or parties to participate in the tariff setting process through filling of reply, comments and filing of intervention requests by any interested person.

5. No Intervention request was filed by any person. However, Alternate Energy Development Board (AEDB), Central Power Purchasing Agency (CPPA) and Hyderabad Electric Supply Company (HESCO) submitted their comments while raising objections on high project cost and the levelized tariff requested by FFCEL.

6. A Public Hearing of the Petition was held on May 18, 2010 at main NEPRA office Islamabad, which was attended by representatives of various IPPs and stakeholders including the CPPA and the Petitioner.

7. Based on submissions of FFCEL, comments offered by the stakeholders as well as proceedings of the case, the following issues have been framed for discussion and consideration of the Authority.

Issues

i). Net Annual Energy Production
ii). EPC Cost
iii). Other Project Costs
iv). Debt Servicing
v). Return on Equity
vi). O&M Cost
vii) Insurance Expense
viii) Working Capital
ix). Levelized tariff

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

8 Net Annual Energy Production

8.1 FFCEL has selected Nordex S77 Wind Turbines of 1.5 MW class with hub height of 80 meters for their project. Thirty-three (33) such turbines would be required to make up a total installed capacity of 49.5 MW. According to the Petitioner the selection of plant & equipment has been done after due diligence regarding reliability and suitability to local conditions besides other factors such as;

- equipment to be of latest technology, megawatt class and high efficiency;
- sufficient track record of the turbine type,
- cost competitiveness of the equipment,
- grid compatibility; and
- suitability of operation and maintenance concept, availability of spare parts and performance warranty.

8.2 The project feasibility has been completed by its consultant Lahmeyer International, and has been approved by the panel of experts appointed by Alternate Energy Development Board (AEDB) as conveyed to FFCEL and NEPRA vide AEDB's letter No. B/3/1/FFC/07 dated May 13, 2010.

8.3 FFCEL has estimated an annual net energy production of 144.100 GWh. According to FFCEL net annual production for its wind farm has been estimated by its technical consultant Lahmeyer International, who carried out detailed technical evaluation and study for the Project based on;

- The selected Nordex WTG
- The site conditions; and
- Micrositing

8.4 In view of the above, the following details and assumptions have been provided by FFCEL.

Gross Capacity	49.5 MW
Wake Losses	1.4 MW
Auxuliary Consumption	1.25 MW
Net Output Delivered	46.85 MW
Net Plant Capacity Factor	33.23%
Net Annual Energy Production	144.100 GWh
Average annual wind speed	7.4 m/s

8.5 The net annual energy production given in the feasibility of FFCEL conducted by Lahmeyer International is however, 150.828 GWh at plant capacity factor of 35%.

8.6 The Authority in the case of other wind power IPPs has approved net annual production on recommendations of AEDB based on a study carried out by its Independent Consultant Risoe National Laboratory Denmark. As per the previous practice, AEDB was requested to verify the proposed net annual production for FFCEL wind farm. AEDB vide its

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

letter B/3/FFC/07 dated May 11, 2010 has recommended 135.200 GWh as the estimated net annual energy production for FFCEL wind project. According to AEDB, the estimated annual energy production at FFCEL wind farm site has been calculated on the basis of probability/confidence level of P50 and annual benchmark wind speed for Jhampir region i.e. 7.3 m/s at 80m height above ground.

8.7 The net annual energy production approved by the Authority based on recommendations of AEDB in the case of other IPPs such as Arabian Sea, Zorlu Enerji and Dawood Power is given hereunder.

Zorlu Enerji	Arabian Sea	Dawood Power
149.137	141.300	141.800
P90	P50	P70

8.8 The project site of FFCEL is located in close proximity of Zorlu Enerji. The recommended net annual energy production for FFCEL wind farm based on a study conducted by its Consultant (Risoe) has been calculated after taking into consideration the effect of wake losses between the turbines in the FFCEL park as well as from the neighboring wind turbines. The following technical parameters have been applied by the AEDB's consultant for calculating the net annual energy production of FFCEL.

Technical Parameters	**AEDB's Recommendations**
Gross Capacity	49.5
Wind Turbines availability	97%
Electrical losses	2.5%
Auxiliary Consumption	1%
Power curve density correction loss	3.5% (1.225 Kgm^{-3} – 1.175 Kgm^{-3})
Total technical losses	10%
Net annual energy production	135.200 (PCF=31.18%)

8.9 Subsequent to the above recommendations of AEDB for the net annual energy production, FFCEL submitted its revised working based on AEDB's approved benchmark wind speed of 7.3 m/s (against its previous calculations on 7.4 m/s) for the Jhampir area, whereby it has proposed net annual energy production of 143.6 GWh

8.10 The net annual energy production of a wind farm has direct bearing on its tariff and risk of the lenders as well as investors. It is, therefore, important for the viability of wind projects that a uniform criteria based on careful analysis of available wind data and other project characteristics must be applied while calculating the net annual production of these projects, so that the resultant net annual production of the wind projects minimizes the wind risk to be assumed by the power purchaser as well as risk of other stakeholders such as lenders and sponsors of the project.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

8.11 The net annual energy production as initially proposed and later revised by FFCEL as well as recommended by AEDB is given hereunder.

Net annual Energy Production (GWh)	FFCEL	AEDB
As per initial submission based on Wind speed of 7.4 m/s	144.100	
As per revised submission based on Wind speed of 7.3 m/.s	143.600	135.200

8.12 AEDB vide its latest letter dated July 02, 2010 has conveyed that net annual production verified by its consultant (Risoe) should be considered as the lower bound and NEPRA should not accept the production number lower than the verified Risoe figure, while considering the energy production of a wind farm. AEDB has further stated that the higher production number guarantee from the IPP will bring more energy to the grid system and will help to reduce the project tariff.

8.13 According to the Policy for Development of Renewable Energy for Power Generation 2006, the Wind Risk, defined as the risk of variability of wind speed shall be absorbed by the Power Purchaser. The Policy also specifies that a "Benchmark Wind Speed" will be determined (by AEDB) which will then be used to calculate Benchmark Energy Production. In the instant case the Authority notes that FFCEL has also accepted the Benchmark Wind Speed of 7.3 m/sec as worked out by AEDB, however it has offered to guarantee a higher annual energy output than what has been recommended by AEDB.

8.14 The Authority also notes that a higher Benchmark Energy will only result in a lower cost/kWh relative to a lower Benchmark Energy; otherwise total revenue will remain the same, in both cases. The mechanism under the Policy for payment, however, appears to benefit an IPP if it opts for a lower Benchmark Energy Level. Therefore, the Authority conducted a through examination of the issue. In this respect NEPRA's experts analysed different scenario along with AEDB to confirm that FFCEL's offer of higher Benchmark Energy level would not result into an undue disadvantage for the power purchaser, leading to higher tariff for end-consumers.

8.15 The Authority observed that using FFCEL proposed energy the Power Purchaser would not be required to pay more than corresponding AEDB's recommended energy level in any scenario.

8.16 The Authority concludes that determination of the Benchmark Wind Speed is to be made by AEDB and in the instant case FFCEL has also accepted AEDB's recommend figure of 7.3 m/sec. Therefore any computed energy using this wind speed may not be of concern to NEPRA as long as Benchmark Energy is equal or higher than what has been recommended by AEDB.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

8.17 Accordingly, the Authority agrees with FFCEL's request and approves Benchmark annual energy production of 143.6 GWh. The monthly benchmark energy table as provided by FFCEL is attached herewith (Annex-I).

9. EPC Cost

9.1 FFCEL has requested US$ 112.979 million for its EPC cost. In support of its claim, it has provided a copy of EPC contract duly signed with Nordex Singapore Equipment (Private) Limited. The EPC Contract is based on a firm legally binding, executed EPC Agreement between the Project Company and the EPC Contractor. The scope of works to be performed by the EPC contractor include cost of turbines, blades, electrical equipment and all machinery, auxiliary equipment and also includes the cost of erection, testing, completion and commissioning, training and construction of the facility. According to the terms, the EPC Contract comprises of On-shore component and Off-shore component at fixed lump sum price as per the following details.

Off-Shore	US$ 87.531 million
On-Shore	US$ 23.668 million
Total	US$ 111.199 million

9.2 In addition to the above FFCEL has claimed US$ 1.78 million for Letter of Credit (L/C) opening & confirmation charges for the amount of L/C to be opened in favor of the EPC Contractor. The cost of L/C opening and confirmation charges is not included in the EPC contract. Further, FFCEL has claimed an estimated amount of US$ 0.693 million separately on account of taxes and duties for the imported plant and equipment. The Petitioner has not assumed any cost on account of Custom Duty, Withholding tax and Special Excise Duty as per the provisions of SRO 575(I)/2006. The cost of US$ 0.693 million has been estimated on account of Sindh Infrastructure Development Surcharge @ 0.85% of the imports for the Project. However, FFCEL proposed that any taxes or custom duty if paid by it under statutory provisions of the law should be reimbursed to it on the basis of actual at the time of COD.

9.3 The Authority has reviewed the EPC cost (Off-shore and On-shore) along with the scope of work and other terms and conditions of the EPC Contract signed with Nordex Singapore Equipment (Private) Limited (the EPC Contractor) amounting to US$ 111.199 million and found to be reasonable as compared to the EPC cost already approved by the Authority in the case of other wind power projects and therefore, approved as such.

9.4 According to the term sheet agreed by FFCEL with its lenders, FFCEL shall pay commission to the bank @ 0.15% per quarter on the outstanding LC amount. On this basis the Authority has assessed US$ 1.250 million as against FFCEL's demand of US$ 1.780 million on account of LC opening and confirmation charges and allowed to FFCEL.

9.5 Under the Government of Pakistan Policy for Development of Renewable Energy for Power Generation 2006, (Renewable Energy Policy 2006) all taxes and duties are a pass through cost. The Authority has therefore accepted FFCEL's request for US$ 0.693 million

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

on account of taxes and duties subject to adjustment on the basis of actual at the Commercial Operation Date (COD) on production of authentic documentary evidence by FFCEL.

9.6 On the basis of above, the total EPC Cost based on the fixed price EPC contract as well as L/C charges and the cost of duty and taxes works out to be US$113.142 million and therefore allowed to FFCEL.

10. Other Project Costs

10.1 FFCEL has claimed US$ 24.025 million on account of other project cost split up under various heads as given hereunder;

Other Project costs	US$ Million
Non-EPC Cost	2.848
Project Development Cost	3.721
Land Cost	0.245
Pre-COD Insurance Cost	2.187
Financial Charges	3.102
Interest During Construction	11.922
Total	24.025

10.2 The above cost under each head is discussed in the following paragraphs;

Non-EPC Cost

10.2.1 The Petitioner has claimed US$ 2.848 million under the head of Non-EPC cost. According to the information provided by FFCEL this cost component includes the cost of. Fixed Assets, Project Administrative Office cost, residential colony, cost of security for expatriates and optic fibre cable connection etc.

10.2.2 The Authority has examined the details of cost estimates provided under different heads and finds it to be on higher side as compared to similar costs allowed to other such wind projects. Further the Authority finds no justification for construction of a luxurious residential colony for the project staff with the facility of swimming pool, club, basket and tennis courts at the expense of power purchaser and ultimate consumers of electricity. In view of the aforementioned the Authority has assessed and allowed US$ 1.020 million for the cost of various project activities as included by FFCEL under this cost head.

Project Development Cost

10.3.1 FFCEL has claimed US$ 3.721 million as project development cost, which includes the cost of feasibility study, fees of technical, financial and legal consultants, salaries and traveling expenses of the project company during construction and the cost for permits and licenses.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

10.3.2 The cost of project feasibility US$ 1.005 million as claimed by FFCEL has been verified from the agreement signed with its consultant (Lahmeyer International) and therefore allowed. However, the cost of salaries and other overheads of the company during the project construction period as per the Petitioner's claim of US$ 1.529 million are on the higher side. The Authority, in the case of other wind power IPPs has allowed a maximum of US$ 0.832 million under this head, therefore the same is being allowed to FFCEL. After necessary adjustments, the Authority has assessed an aggregate amount of US$ 2.853 million and being allowed to FFECEL under the head of project development cost.

Land Cost

10.4 FFCEL has claimed US$ 0.245 million on account of land lease rental and the cost for obtaining the right of way to the project site. The cost for lease rentals is a part of operating cost hence can not be considered here. As regards the cost for right of way, FFCEL has not provided any documentary evidence to substantiate its claim. As per information provided by FFCEL its project site is adjacent to the project site of Zorlu which already has an access to its project site and is in the process of developing its wind farm. The Authority therefore finds no justification for obtaining right of way separately by FFCEL and therefore does not allow any cost on this account.

Pre-COD Insurance Cost

10.5 FFCEL has claimed US$ 2.187 million on account of insurance expense during the project construction period. According to the terms of EPC contract the insurance of all plant and equipment from port of manufacturing facility to the project site and project completion and commissioning is responsibility of the FFCEL. The Authority in the case of other such projects has set up a maximum bench mark of 1.35% of the EPC Cost. Accordingly, the cost of insurance during the project construction period for FFCEL works out US$ 1.518 million and being allowed subject to adjustment at COD on the basis of actual not exceeding 1.35% of the EPC cost.

Financial Charges

10.6 FFCEL has claimed US$ 3.102 million on account of financial charges. This component comprises bank charges, commission and fees of the lenders such as arrangement fee, commitment fee, lender's advisory fee, L/C Commission etc. The Authority has already established a benchmark of 3% of the total debt as the maximum for this cost component in the case of other IPPs. The cost of financial charges as claimed by FFCEL amounting to US$ 3.102 million is within the maximum limit prescribed by the Authority, and therefore approved.

Interest During Construction (IDC)

10.7.1 FFCEL has estimated an amount of US$ 11.922 million on account of interest during the project construction (IDC). According to the information provided by FFCEL, the IDC has been calculated on the basis of term sheet executed between FFCEL and the Lead

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Arrangers of project finance, which stipulates a base rate equal to 6-month KIBOR plus a margin of 295 basis points.

10.7.2 The IDC is adjustable on the basis of actual draw down of loans and the prevailing KIBOR during the project construction period. The amount of IDC US$ 11.922 million based on the aforementioned assumptions is being accepted subject to adjustment on the basis of actual draw down of loan and the prevailing interest charges during the project construction period, at the time of COD.

11. Recapitulating the approved project cost for FFCEL under various heads is given hereunder

Project Cost	**Approved (US$ Mln)**
EPC Cost as per the EPC Contract	111.199
L/C opening/confirmation charges	1.250
Duty and taxes	0.693
Total EPC Cost	113.142
Non-EPC Cost	1.020
Project Development Cost	2.853
Pre-COD Insurance	1.518
Financial Charges	3.102
Interest During Construction (IDC)	11.922
Total Project Cost	133.557

12. **Debt Servicing**

12.1 FFCEL submitted that its entire debt amount is in local currency which has been arranged through a consortium of six local banks i.e Muslim Commercial Bank, National Bank of Pakistan, Habib Bank Limited, Faysal Bank Limited, Allied Bank Limited and Bank Alfalah Limited (together the lead arrangers). The terms of loan agreed with the financiers is 10 years plus two years grace period based on KIBOR at 12.38% plus a margin of 2.95% to be adjusted on bi-annual basis i.e. 6-month KIBOR. FFCEL, in support of its claim provided a copy of the term sheet duly signed by it with the lenders.

12.2 Having considered the documentary evidence provided by FFCEL the Authority considers that under the prevailing financial market position, finalizing such an arrangement indicates the confidence level of the banks in the project. The Authority considers that the terms and conditions agreed by the Petitioner are reasonable despite the fact that on the face of it this option of local financing may appear to be costly option as compared to the foreign financing. The Authority is also cognizant of the fact that obtaining foreign financing is not only very difficult but may prove more costly in the end considering the Rupee depreciation trend in the past. In view thereof the Authority has decided to accept FFCEL's request for

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

local financing (KIBOR based) with 6-monthly payment of debt servicing on the basis of 6-monthly KIBOR plus a spread of 295 basis points.

13. Return On Equity

13.1 FFCEL has proposed 18% return on equity (IRR based) net of 7.5% Withholding Tax. FFCEL during hearing of the petition held on May 18, 2010 made a detailed presentation describing Aswath Damodaran approach for calculating the required rate of return for equity investments in the country's risk environment.

13.2 The Authority considers that a rate of return to be allowed to an IPP should be commensurate to that earned by other investments of comparable risk. The Authority is cognizant of the fact that the available latest methods/techniques may provide a fair assessment of the required rate of return on investment in a matured and established power markets; but may not provide the correct assessment of risk on investment associated with comparatively new power generation technologies such as wind, solar and other renewable technologies with no track record and credible data to evaluate the perceived risk of the investors and lenders. The Authority has already allowed 17% return (IRR based) to promote wind power sector and other power generation technologies based on indigenous resources such as hydel and coal based IPPs, which is 2% more than allowed in the case of thermal power projects. In view of the aforementioned, the Authority therefore allows 17% return on equity (IRR based) to FFCEL.

14. O & M Cost

14.1 FFCEL has proposed US$ 1.642 million and US$ 2.760 million per annum for its O&M cost for year 1-2 and 3-20 years life of the project respectively as per details given hereunder;

O&M Cost	**Year 1-2 (US$ Mln)**	**Year 3-20 (US$ Mln)**
O&M outsourced Cost	0.622	1.900
Fixed Assets	0.092	0.058
Payroll & allied expenses	0.330	0.330
Operation cost of backup diesel generator	0.100	0.100
Vehicles fuel & maintenance	0.040	0.040
Technical Consultants Fee	0.126	0.000
Other Administrative Costs	0.332	0.332
Total Operating Cost	**1.642**	**2.760**

14.2 According to the information provided by FFCEL, it has signed an agreement with the EPC Contractor to perform O&M of the power plant for initial two years after COD at lump sum price of US$ 0.622 million per annum for all the O&M during the initial two years of plant operation including the cost of spare parts and routine maintenance works. FFCEL

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

has also signed another agreement with Nordex who will undertake O&M of the power plant for the next three years at a cost of US$ 1.898 million per annum. The agreed price covers the cost of all spare parts and services required for proper maintenance and operation of the plant. After 5 years of COD, the O&M of the plant shall be handed over to FFCEL. FFCEL has also requested for indexation and division of O&M cost estimated to be 30% in foreign currency and 70% for the local component.

14.3 The per annum O&M cost requested by FFCEL is on higher side as compared to the same approved by the Authority in the case of other such IPPs. The higher O&M cost per annum was also objected by CPPA and other stakeholders during hearing of the petition. FFCEL in support of its claim argued that it has signed O&M contract with Nordex after extensive negotiations and the reason for its higher O&M cost was higher risk of plant operation perceived by the contractor. FFCEL further argued that there is no precedence or benchmark available to ascertain the required O&M cost per annum for operation of wind power plants in the country and it is the only wind power IPP who has managed to sign its O&M contract with Nordex. .

14.4 FFCEL has provided a copy of duly signed O&M contract for first two years as well as for the next three years. The O&M contractors fee amounting to US$ 0.622 million per annum for year 1-2 and US$ 1.898 million per annum for the next three years has been verified from the respective O&M contracts, and therefore being allowed.

14.5 The major portion of O&M cost, other than the fixed per annum O&M Contract Fee of the contractor for the first two and next years of plant operation, has been claimed by FFCEL under the heads Payroll & allied expenses and Other Administrative expenses which amount to US$ US$ 0.330 million and US$ 0.332 respectively. FFCEL has provided further details of these expenses whereby the aforementioned costs include salary and benefits of all staff (administrative, operational and security) to be employed by FFCEL at Site, Karachi office and Head Office in Islamabad. The cost claimed by FFCEL under the Other Administrative Cost include office expenses such as utility, traveling, rents, printing and stationary, audit fees, generation license fees, security trustee fee payable to lenders and costs for their legal and technical advisors etc.

14.6 The Authority considers that requirement of FFCEL for a third office after COD at Karachi and its associated cost, in addition to its other two offices i.e. at site and head office in Islamabad, is not justified. Further, the claim of FFCEL for operating cost of diesel generator and the cost of a technical consultant (Lahmeyer) to monitor plant operations for two years after COD can not be allowed. In the opinion of the Authority, FFCEL may get power from the grid to operate its auxiliary equipment, rather than operating a diesel generator, when its machines are not running because of low or no wind speed. Similarly there is no need to employ an extra technical consultant for monitoring of plant operations after COD as, its O&M Contractor and its professional team is responsible for proper operation and performance of wind turbines according to the specifications and efficiency levels as guaranteed in the EPC contract.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

14.7 After making the necessary adjustments as pointed out in the aforementioned paras, the Authority has assessed and approved US$ 1.087 million and US$ 2.363 million for per annum O&M cost for the first two years and next three years of plant operation respectively.

14.8 FFCEL has claimed the same amount of O&M cost per annum (i.e year 3- year 20) for the next eighteen years of plant operation. FFCEL has not provided any justification or rationale for claiming a higher O&M cost for the aforementioned period. The Authority understands that per annum O&M cost of FFCEL after the fifth year when operation of its plant will be managed by the trained professionals of the company after expiry of the O&M contract, shall be considerably less as compared to the initial 5 years.

14.9 In view of the above, the Authority has, therefore, decided to allow FFCEL its O&M cost in three tiers of 20 years tariff control period along with the applicable indexations as stated hereunder.

O&M Cost	**Year 1-2 (US$ Mln)**	**Year 3-5 (US$ Mln)**	**Year 6-20 (US$ Mln)**
O&M cost per annum	1.087	2.363	1.853
Indexation-Local @ 70% of above	WPI	WPI	WPI
Indexation–Foreign @ 30% of above	PKR/US$, CPI	PKR/US$, CPI	PKR/US$, CPI

15. Insurance Expense

15.1 FFCEL has proposed US$ 1.112 million on account of Insurance expense per annum for maintaining Insurance of its plant & equipment for the 20 years of tariff control period, based on quotes received from the insurance providers. The cost of insurance claimed by FFCEL is about 1% of its approved EPC cost. The cost of insurance US$ 1.112 million being within the maximum benchmark already set by the Authority in the case of other IPPs is therefore, approved as per the request of FFCEL.

16. Working Capital

16.1 FFCEL has stated that due to mismatch in the timing of cash flows (accounts receivable and accounts payable), it will require a working capital facility to the tune of PKR 116 million in order to meet its payment obligations on time. FFCEL has further stated that as per terms of the EPA to be executed between the Project Company and the Power Purchaser, the Project Company will invoice the Power Purchaser for the settlement of the Monthly Energy Payment (as defined in the EPA) on or after the first day of the month following the month to which the Monthly Energy Payment (as defined in the EPA) relates and the Power Purchaser is required to make the payment of the same by the thirtieth day following the day of submission of the invoice i.e. 31st day. Furthermore, the Project Company is required to collect sales tax from the Power Purchaser on behalf of the

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Government of Pakistan and deposit the same by the 25th day of the month to which it relates.

16.2 FFCEL has further stated that under the terms of the O&M Agreement entered into by the Project Company, the Project Company is required to make payment to the O&M Contractor on the 15th day from the date of invoice. The O&M Contractor is to invoice the Project Company on or after the first day of the month following the month to which the invoice relates. Additionally, the Project Company also has to meet its own debt servicing, administrative and payroll expenses which shall fall due on the last day of each calendar month.

16.3 In view of the above FFCEL has claimed Rs. 0.1163/kWh in tariff on levelized basis for the interest payment obligation on the working capital facility of Rs. 116 million. The following basic parameters have been applied in its calculations for the working capital component.

	IN PERCENTAGE
BASE RATE FOR WORKING CAPITAL FACILITY – 6-MONTH KIBOR	12.38%
MARGIN OVER BASE RATE	2.00%
ALL-IN INTEREST RATE	**14.38%**

16.4 The power purchaser (CPPA) in its comments and also at the time of hearing objected to FFCEL request for working capital facility of Rs. 116 million while stating that it is the responsibility of company professionals to manage its monthly cash flows and therefore, no cost on this account be passed on to the power purchaser and the ultimate consumers of electricity.

16.5 The Authority has allowed working capital component of tariff in the case of thermal IPPs to meet its requirement of fuel inventory only. As regards the mismatch in timing of cash flows (accounts receivable and accounts payable) on month to month basis, the Authority concurs with the opinion of the power purchaser. The Authority understands that according to the billing mechanism as provided in the Energy Purchase Agreement, an IPP gets paid by the power purchaser for energy delivered based on the total approved tariff for various components through invoices raised by the power producer on monthly basis. In this way an IPP gets paid for certain components of tariff such as debt servicing, return on equity etc in advance of their actual payment obligations, on which the company earns profit from the bank. The Authority, therefore, considers that requirement of a working capital component of tariff for the wind power IPPs and as claimed by FFCEL in the instant tariff petition is not justified and hence not allowed.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

17. Levelized Tariff

17.1 FFCEL requested a levelized tariff of Rs. 15.2108/kWh (US Cents 17.8951/kWh at PKR/US$ exchange rate of Rs. 85) for the period of 20 years, which for the first ten years would be Rs.18.8464/kWh (US Cents 22.1723/kWh) and Rs 5.8723/kWh (US Cents 6.9086/kWh) for the remaining period.

17.2 The Authority observed that the levelized tariff for the 20 years requested by FFCEL was about 4 US cents/kWh higher when compared with the other comparable IPPs which were given a levelized tariff in the range of US Cents 12 to 13/kWh.

17.3 In order to assess the reasonability of FFCEL's request the Authority carefully analyzed the factors contributing to the higher tariff in the case of FFCEL. Based on the analysis the Authority observed that the tariff in the instant case was higher due to the following reasons:

i) The Interest During Construction (IDC) was higher by US$ 9.0 million (approx) as comparecvd to the projects with foreign financing.
ii) The net annual energy production was less by 5.537 GWh (as compared to Zorlu)

17.4 The Authority, in order to make an apple to apple comparison, considered it appropriate to work out the impact of abovementioned factors affecting the tariff in the instant case. The analysis revealed that the impact of IDC alone, because of local financing at KIBOR 15.33%, due to which the total project cost of FFCEL was higher by US$ 9 million as compared to other projects such as Zorlu, increased its levelized tariff by US cents 3.260/kWh. Similarly due to the lower net estimated electrical out put compared to Zorlu, the levelized tariff in the case of FFCEL further increased by US cents 0.500/kWh. The Authority further observed that in the past twenty years (1990-2010) annual average depreciation of Pak Rupee against US$ remained about 5% per annum. Assuming the same trend continues for future as it is envisaged, the expected total cost of debt service for the 10 years term in the case of foreign borrowing is almost equivalent to that of local financing. In case the KIBOR declines in the future, the amount of debt service in the instant case would also decrease, which will have a positive impact on tariff. From the analysis it reveals that although in the beginning the foreign financing appears to be a cheaper option but its impact may neutralize due to depreciation of PKR against US$ in the long run; thus resulting in a higher tariff.

17.5 Another advantage of local financing over foreign financing is that the local debt is a known quantified cost as compared to foreign debt which is uncertain and contingent upon various factors including exposure of devaluation of Pak Rupee.

17.6 The Authority also observed that besides the issue of merits/demerits of local financing and its impact on the tariff, the Government of Pakistan Policy for Renewable Energy 2006 permits an IPP to procure debt in any of the two modes i.e. local (KIBOR) or

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

foreign (LIBOR) based mode of financing. The decision of an IPP to go for either local or foreign financing, however, depends on its availability for the project.

17.7 Having considered all the information and evidence provided by FFCEL, the Authority considers that the levelized tariff of Rs. 13.6927/kWh or US cents 16.1090/kWh (at PKR/US$ exchange rate of Rs. 85.00) based on 20 years tariff control period (as attached herewith Annex-II) is reasonable and competitive with the tariffs of other similar projects based on the common reference parameters and based on costs allowed to FFCEL in the foregoing paras including 17% return on equity.

Order

18. Pursuant to Rule 6 of the NEPRA Licensing (Generation) Rules, 2000, FFC Energy Limited 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 3-5 Rs/kWh	Year 6-10 Rs/kWh	Year 11-20 Rs/kWh	Indexation
Fixed O&M Local	0.4504	0..9791	0.7678	0.7678	WPI
Fixed O&M Foreign	0.1930	0.4196	0.3290	0.3290	PKR/US$, US CPI
Insurance	0.6582	0.6582	0.6582	0.6582	PKR/US$
Debt Service	12.5637	12.5637	12.5637	0	KIBOR
Return on Equity	2.6879	2.6879	2.6879	2.6879	PKR/US$
Total	16.5532	17.3085	17.0066	4.4429	

i) The reference tariff has been calculated on the basis of net annual production of 143.600 GWh at annual net plant capacity factor of 33.12%.

ii) The above charges will be limited to the extent of net annual energy production of 143.600 GWh. Net annual production in excess of 143.600 GWh will be charged at 10% of the tariff for that particular year.

iii) In the above tariff no adjustment for Carbon Emission Receipts (CERs) 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 Generation, 2006.

iv) The reference PKR/Dollar rate has been assumed at 85.00.

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

vi) The monthly benchmark energy production table along with monthly power curves is attached herewith as Annex-I

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

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

viii) Debt Servicing Schedule is attached as Annex-III

The following indexations shall be applicable to the reference tariff;

I. One Time Adjustment

a. The Principal repayment and the cost of debt shall be adjusted at Financial Close as per the actual borrowing composition.

b. Interest During Construction (IDC) shall be adjusted at COD as per actual based on actual disbursement of loans and prevailing KIBOR rates during the project construction period.

c. The Reference tariff table shall be revised at COD while taking into account the above adjustments. The Petitioner will submit its request to the Authority within 15 days of COD for necessary adjustment 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 may be reimbursed by CPPA to the Petitioner on production of original receipts. This payment may 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 may 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 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 15% return on equity according to the following formula:

Withholding Tax Payable	=	$[\{15\% * (E_{(Ref)} - E_{(Red)}\} \times 7.5\%]$
Where:		
$E_{(Ref)}$	=	Reference Equity (US$ 26.7115 million x 85)
$E_{(Red)}$	=	Equity Redeemed

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;

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 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 in accordance with the standard practice adopted by the power purchaser. The mode of indexation will be as follows:

$$F\ O\&M_{(LREV)} = O\&M_{(LREF)} * WPI_{(REV)} / 168.82$$

$$F\ O\&M_{(FREV)} = O\&M_{(FREF)} * US\ CPI_{(REV)} / 217.965 * ER_{(REV)} / 85$$

Where:

$F\ O\&M_{(LREV)}$	=	The revised applicable Fixed O&M local component of the Fixed Charges indexed with WPI
$FO\&M_{(FREV)}$	=	The revised applicable Fixed O&M foreign component of the Fixed Charges indexed with US CPI and currency fluctuation
$FO\&M_{(FREF)}$	=	The reference fixed O&M foreign component of the Fixed Charges for the relevant period.
$FO\&M_{(LREF)}$	=	The reference fixed O&M local component of the Fixed Charges for the relevant period
$WPI_{(REV)}$	=	The Revised wholesale Price Index (Manufactures)
$WPI_{(REF)}$	=	168.82, Reference wholesale price index (manufactures) of June 2010 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.
$US\ CPI_{(REF)}$	=	217.965, Reference US CPI notified by the Bureau of Labor Statistics (All Urban Consumers) for the month of June 2010.
$ER_{(REV)}$	=	The Revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

ii) Adjustment for KIBOR variation

The interest part of fixed charge component will remain unchanged throughout the term except for the adjustment due to variations in interest rate as a result of 6-monthly variation in KIBOR while spread on KIBOR (2.95%) remaining the same according to the following formula:

$\Delta I = P_{(REV)} * (KIBOR_{(REV)} - 12.38\%) / 2$

Where:

ΔI	=	The variation in interest charges applicable corresponding to variation in 6-month KIBOR. Δ I can be positive or negative depending upon whether $KIBOR_{(Rev)}$ > or < 12.38%. 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 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.

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
$ROR_{(REF}$	=	The reference ROE component of the tariff expressed in Rs/kWh
$ER_{(REV)}$	=	The revised US$/PKR exchange rate as notified by the National Bank of Pakistan
$ER_{(REF)}$	=	The reference exchange rate of PKR 85=1 US$

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

Note:

Adjustment on account of inflation, local inflation, US CPI, foreign exchange variation and 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.

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 for record of data.

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 would process and obtain emissions/carbon credits expeditiously and credit the proceeds to the Power Purchaser as per the policy issued by the Federal Government.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

FFCEL 49.5 MW WIND POWER PROJECT

BENCHMARK ENERGY PRODUCTION TABLE

Months	Benchmark Wind Speed m/s	Benchmark Energy GWh
January	5.2	4.9
February	5.6	6.2
March	5.9	7.5
April	7.8	13.5
May	9.9	22.1
June	10.3	21.4
July	10.4	22.8
August	9.6	19.8
September	8	14.0
October	5.2	4.6
November	4.4	2.8
December	4.9	3.9
Mean of Months	7.3	12.0
Annual Energy		143.6

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

FFCEL 49.5 MW Wind Power Project

Monthlty Complex Power Curves

Wind Speed m/s	Energy Production Estimates - GWh											
	January	February	March	April	May	June	July	August	September	October	November	December
3.0	0.6	0.7	0.7	0.4	0.3	0.4	0.4	0.4	0.4	0.5	0.6	0.5
3.1	0.7	0.9	0.8	0.5	0.4	0.5	0.4	0.5	0.5	0.6	0.7	0.6
3.2	0.8	1.0	0.9	0.6	0.5	0.6	0.5	0.6	0.6	0.7	0.8	0.7
3.3	0.9	1.1	1.0	0.7	0.5	0.7	0.6	0.7	0.6	0.8	0.9	0.8
3.4	1.0	1.2	1.2	0.8	0.7	0.8	0.7	0.8	0.8	0.9	1.1	0.9
3.5	1.2	1.4	1.3	1.0	0.8	0.9	0.9	0.9	0.9	1.1	1.2	1.1
3.6	1.3	1.5	1.5	1.1	0.9	1.0	1.0	1.0	1.0	1.2	1.3	1.2
3.7	1.5	1.7	1.6	1.2	1.0	1.1	1.1	1.1	1.1	1.3	1.5	1.4
3.8	1.6	1.9	1.8	1.4	1.1	1.3	1.3	1.3	1.3	1.5	1.7	1.5
3.9	1.8	2.1	2.0	1.5	1.3	1.4	1.4	1.4	1.4	1.6	1.8	1.7
4.0	2.0	2.2	2.2	1.7	1.4	1.6	1.6	1.6	1.6	1.8	2.0	1.9
4.1	2.2	2.4	2.4	1.9	1.6	1.8	1.7	1.8	1.7	2.0	2.2	2.0
4.2	2.4	2.6	2.6	2.1	1.8	1.9	1.9	2.0	1.9	2.2	2.4	2.2
4.3	2.6	2.9	2.8	2.2	2.0	2.1	2.1	2.1	2.1	2.4	2.6	2.4
4.4	2.8	3.1	3.1	2.4	2.2	2.3	2.3	2.3	2.3	2.6	2.8	2.7
4.5	3.0	3.3	3.3	2.6	2.4	2.5	2.5	2.5	2.5	2.8	3.1	2.9
4.6	3.3	3.6	3.5	2.9	2.6	2.7	2.7	2.8	2.7	3.0	3.3	3.1
4.7	3.5	3.8	3.8	3.1	2.8	2.9	2.9	3.0	2.9	3.3	3.5	3.4
4.8	3.8	4.0	4.1	3.3	3.0	3.2	3.2	3.2	3.1	3.5	3.8	3.6
4.9	4.1	4.3	4.3	3.6	3.2	3.4	3.4	3.5	3.4	3.8	4.0	3.9
5.0	4.4	4.6	4.6	3.8	3.5	3.7	3.6	3.7	3.6	4.0	4.3	4.1
5.1	4.6	4.8	4.9	4.1	3.7	3.9	3.9	4.0	3.9	4.3	4.6	4.4
5.2	4.9	5.1	5.2	4.4	4.0	4.2	4.2	4.2	4.1	4.6	4.9	4.7
5.3	5.3	5.4	5.5	4.7	4.3	4.5	4.5	4.5	4.4	4.9	5.2	5.0
5.4	5.6	5.6	5.8	4.9	4.5	4.7	4.7	4.8	4.7	5.2	5.5	5.3
5.5	5.9	5.9	6.1	5.2	4.8	5.0	5.0	5.1	5.0	5.5	5.8	5.7
5.6	6.2	6.2	6.5	5.6	5.1	5.3	5.4	5.4	5.3	5.8	6.1	6.0
5.7	6.6	6.5	6.8	5.9	5.4	5.6	5.7	5.7	5.6	6.1	6.4	6.3
5.8	6.9	6.8	7.1	6.2	5.8	5.9	6.0	6.0	5.9	6.4	6.7	6.7
5.9	7.3	7.1	7.5	6.5	6.1	6.3	6.3	6.4	6.2	6.7	7.0	7.0
6.0	7.6	7.4	7.8	6.9	6.4	6.6	6.7	6.7	6.5	7.1	7.3	7.4
6.1	8.0	7.7	8.2	7.2	6.8	6.9	7.1	7.1	6.9	7.4	7.7	7.7
6.2	8.3	7.9	8.5	7.6	7.2	7.3	7.4	7.4	7.2	7.7	8.0	8.1
6.3	8.7	8.2	8.9	7.9	7.5	7.6	7.8	7.8	7.6	8.1	8.3	8.5
6.4	9.1	8.5	9.2	8.3	7.9	8.0	8.2	8.1	7.9	8.4	8.6	8.8
6.5	9.4	8.8	9.6	8.7	8.3	8.3	8.6	8.5	8.3	8.8	9.0	9.2
6.6	9.8	9.1	9.9	9.0	8.7	8.7	9.0	8.9	8.7	9.2	9.3	9.6

FFCEL 49.5 MW Wind Power Project

Monthlty Complex Power Curves

Wind Speed m/s	Energy Production Estimates - GWh											
	January	February	March	April	May	June	July	August	September	October	November	December
6.7	10.2	9.4	10.3	9.4	9.1	9.1	9.4	9.3	9.1	9.5	9.6	10.0
6.8	10.6	9.7	10.6	9.8	9.5	9.4	9.8	9.6	9.4	9.9	10.0	10.4
6.9	10.9	9.9	11.0	10.2	9.9	9.8	10.2	10.0	9.8	10.2	10.3	10.7
7.0	11.3	10.2	11.3	10.6	10.4	10.2	10.6	10.4	10.2	10.6	10.6	11.1
7.1	11.7	10.5	11.7	10.9	10.8	10.6	11.0	10.8	10.6	10.9	10.9	11.5
7.2	12.0	10.8	12.0	11.3	11.2	11.0	11.4	11.2	11.0	11.3	11.3	11.9
7.3	12.4	11.0	12.4	11.7	11.7	11.3	11.9	11.6	11.3	11.6	11.6	12.3
7.4	12.7	11.3	12.7	12.1	12.1	11.7	12.3	12.0	11.7	12.0	11.9	12.6
7.5	13.1	11.6	13.0	12.4	12.5	12.1	12.7	12.4	12.1	12.3	12.2	13.0
7.6	13.5	11.8	13.4	12.8	13.0	12.5	13.1	12.8	12.5	12.7	12.5	13.4
7.7	13.8	12.1	13.7	13.2	13.4	12.9	13.5	13.2	12.9	13.0	12.8	13.7
7.8	14.1	12.4	14.0	13.5	13.9	13.3	14.0	13.5	13.3	13.4	13.1	14.1
7.9	14.5	12.6	14.3	13.9	14.3	13.6	14.4	13.9	13.6	13.7	13.4	14.5
8.0	14.8	12.9	14.7	14.2	14.8	14.0	14.8	14.3	14.0	14.0	13.7	14.8
8.1	15.1	13.1	15.0	14.6	15.2	14.4	15.2	14.7	14.4	14.4	14.0	15.2
8.2	15.5	13.3	15.3	14.9	15.6	14.8	15.6	15.1	14.7	14.7	14.3	15.5
8.3	15.8	13.6	15.6	15.3	16.1	15.1	16.0	15.4	15.1	15.0	14.6	15.8
8.4	16.1	13.8	15.9	15.6	16.5	15.5	16.4	15.8	15.4	15.3	14.9	16.2
8.5	16.4	14.0	16.1	15.9	16.9	15.9	16.8	16.2	15.8	15.6	15.1	16.5
8.6	16.7	14.3	16.4	16.2	17.4	16.2	17.2	16.5	16.1	15.9	15.4	16.8
8.7	17.0	14.5	16.7	16.5	17.8	16.6	17.5	16.9	16.5	16.2	15.7	17.1
8.8	17.3	14.7	17.0	16.8	18.2	16.9	17.9	17.2	16.8	16.5	15.9	17.4
8.9	17.6	14.9	17.2	17.1	18.6	17.3	18.3	17.6	17.1	16.8	16.2	17.7
9.0	17.9	15.1	17.5	17.4	19.0	17.6	18.6	17.9	17.4	17.1	16.4	18.0
9.1	18.2	15.3	17.7	17.7	19.3	17.9	19.0	18.3	17.8	17.3	16.7	18.3
9.2	18.4	15.5	18.0	18.0	19.7	18.3	19.3	18.6	18.1	17.6	16.9	18.6
9.3	18.7	15.7	18.2	18.3	20.1	18.6	19.6	18.9	18.4	17.9	17.2	18.9
9.4	19.0	15.9	18.4	18.5	20.4	18.9	20.0	19.2	18.7	18.1	17.4	19.2
9.5	19.2	16.1	18.7	18.8	20.8	19.2	20.3	19.5	19.0	18.4	17.6	19.5
9.6	19.5	16.3	18.9	19.1	21.1	19.5	20.6	19.8	19.2	18.6	17.8	19.7
9.7	19.7	16.4	19.1	19.3	21.5	19.8	20.9	20.1	19.5	18.9	18.0	20.0
9.8	19.9	16.6	19.3	19.6	21.8	20.1	21.2	20.4	19.8	19.1	18.3	20.2
9.9	20.2	16.8	19.5	19.8	22.1	20.3	21.5	20.7	20.0	19.3	18.5	20.5
10.0	20.4	17.0	19.7	20.0	22.4	20.6	21.7	21.0	20.3	19.6	18.7	20.7
10.1	20.6	17.1	19.9	20.3	22.7	20.9	22.0	21.2	20.5	19.8	18.9	20.9
10.2	20.8	17.3	20.1	20.5	23.0	21.1	22.3	21.5	20.8	20.0	19.0	21.2
10.3	21.1	17.4	20.2	20.7	23.3	21.4	22.5	21.8	21.0	20.2	19.2	21.4

FFCEL 49.5 MW Wind Power Project

Monthlty Complex Power Curves

Wind Speed m/s	Energy Production Estimates - GWh											
	January	February	March	April	May	June	July	August	September	October	November	December
10.4	21.3	17.6	20.4	20.9	23.6	21.6	22.8	22.0	21.3	20.4	19.4	21.6
10.5	21.5	17.7	20.6	21.1	23.8	21.9	23.0	22.3	21.5	20.6	19.6	21.8
10.6	21.7	17.9	20.8	21.3	24.1	22.1	23.3	22.5	21.7	20.8	19.8	22.0
10.7	21.9	18.0	20.9	21.5	24.3	22.3	23.5	22.7	21.9	21.0	19.9	22.2
10.8	22.1	18.1	21.1	21.7	24.6	22.6	23.7	23.0	22.1	21.2	20.1	22.4
10.9	22.2	18.2	21.2	21.9	24.8	22.8	23.9	23.2	22.3	21.4	20.3	22.6
11.0	22.4	18.4	21.4	22.0	25.0	23.0	24.1	23.4	22.5	21.6	20.4	22.8
11.1	22.6	18.5	21.5	22.2	25.3	23.2	24.3	23.6	22.7	21.7	20.6	23.0
11.2	22.8	18.6	21.7	22.4	25.5	23.4	24.5	23.8	22.9	21.9	20.7	23.2
11.3	22.9	18.7	21.8	22.6	25.7	23.6	24.7	24.0	23.1	22.1	20.9	23.4
11.4	23.1	18.8	21.9	22.7	25.9	23.8	24.9	24.2	23.3	22.2	21.0	23.5
11.5	23.3	18.9	22.0	22.9	26.1	23.9	25.1	24.4	23.4	22.4	21.1	23.7
11.6	23.4	19.0	22.2	23.0	26.3	24.1	25.3	24.5	23.6	22.5	21.3	23.9
11.7	23.6	19.1	22.3	23.2	26.5	24.3	25.5	24.7	23.8	22.7	21.4	24.0
11.8	23.7	19.2	22.4	23.3	26.6	24.4	25.6	24.9	23.9	22.8	21.5	24.2
11.9	23.9	19.3	22.5	23.5	26.8	24.6	25.8	25.1	24.1	22.9	21.6	24.3
12.0	24.0	19.3	22.6	23.6	27.0	24.7	26.0	25.2	24.2	23.1	21.7	24.5
12.1	24.1	19.4	22.7	23.7	27.1	24.9	26.1	25.4	24.4	23.2	21.8	24.6
12.2	24.2	19.5	22.8	23.9	27.3	25.0	26.3	25.5	24.5	23.3	21.9	24.7
12.3	24.4	19.5	22.9	24.0	27.4	25.2	26.4	25.7	24.7	23.4	22.0	24.9
12.4	24.5	19.6	23.0	24.1	27.6	25.3	26.5	25.8	24.8	23.5	22.1	25.0
12.5	24.6	19.7	23.1	24.2	27.7	25.4	26.7	25.9	24.9	23.6	22.2	25.1
12.6	24.7	19.7	23.1	24.3	27.8	25.6	26.8	26.1	25.1	23.7	22.3	25.2
12.7	24.8	19.8	23.2	24.5	28.0	25.7	26.9	26.2	25.2	23.8	22.4	25.3
12.8	24.9	19.8	23.3	24.6	28.1	25.8	27.1	26.3	25.3	23.9	22.4	25.4
12.9	25.0	19.8	23.3	24.7	28.2	25.9	27.2	26.4	25.4	24.0	22.5	25.5
13.0	25.1	19.9	23.4	24.8	28.3	26.0	27.3	26.5	25.5	24.1	22.6	25.6
13.1	25.1	19.9	23.5	24.8	28.5	26.1	27.4	26.6	25.6	24.2	22.6	25.7
13.2	25.2	19.9	23.5	24.9	28.6	26.2	27.5	26.7	25.7	24.3	22.7	25.8
13.3	25.3	20.0	23.6	25.0	28.7	26.3	27.6	26.8	25.8	24.3	22.7	25.9
13.4	25.3	20.0	23.6	25.1	28.8	26.4	27.7	26.9	25.9	24.4	22.8	26.0
13.5	25.4	20.0	23.7	25.2	28.9	26.4	27.8	27.0	26.0	24.5	22.8	26.0
13.6	25.4	20.0	23.7	25.2	29.0	26.5	27.9	27.1	26.1	24.5	22.9	26.1
13.7	25.5	20.0	23.7	25.3	29.1	26.6	28.0	27.2	26.2	24.6	22.9	26.2
13.8	25.5	20.0	23.7	25.4	29.2	26.6	28.1	27.3	26.3	24.6	22.9	26.2
13.9	25.5	20.0	23.8	25.4	29.2	26.7	28.2	27.3	26.3	24.7	22.9	26.3
14.0	25.6	20.1	23.8	25.5	29.3	26.8	28.3	27.4	26.4	24.7	23.0	26.3

FFCEL 49.5 MW Wind Power Project

Monthlty Complex Power Curves

Wind Speed m/s	Energy Production Estimates - GWh											
	January	February	March	April	May	June	July	August	September	October	November	December
14.1	25.6	20.0	23.8	25.5	29.4	26.8	28.4	27.4	26.5	24.7	23.0	26.3
14.2	25.6	20.0	23.8	25.6	29.5	26.9	28.4	27.5	26.5	24.7	23.0	26.4
14.3	25.6	20.0	23.8	25.6	29.6	26.9	28.5	27.6	26.6	24.8	23.0	26.4
14.4	25.6	20.0	23.8	25.6	29.6	27.0	28.6	27.6	26.6	24.8	23.0	26.4
14.5	25.6	20.0	23.8	25.7	29.7	27.0	28.6	27.6	26.6	24.8	23.0	26.4
14.6	25.6	20.0	23.8	25.7	29.8	27.0	28.7	27.7	26.7	24.8	23.0	26.4
14.7	25.6	20.0	23.8	25.7	29.8	27.1	28.7	27.7	26.7	24.8	23.0	26.4
14.8	25.6	20.0	23.7	25.7	29.9	27.1	28.8	27.7	26.7	24.8	23.0	26.4
14.9	25.6	19.9	23.7	25.7	29.9	27.1	28.8	27.8	26.8	24.8	22.9	26.4
15.0	25.6	19.9	23.7	25.7	30.0	27.1	28.9	27.8	26.8	24.8	22.9	26.4

Note : For Average Monthly Wind speed values above 15 m / s, the Energy Production values shall be same as for 15 m /s

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

FFC Energy Limited
REFERENCE TARIFF

Year	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	0.4504	0.1930	0.6582	2.6879	0.2016	2.9782	9.5855	16.7548
2	0.4504	0.1930	0.6582	2.6879	0.2016	3.4523	9.1114	16.7548
3	0.9791	0.4196	0.6582	2.6879	0.2016	4.0018	8.5619	17.5101
4	0.9791	0.4196	0.6582	2.6879	0.2016	4.6388	7.9249	17.5101
5	0.9791	0.4196	0.6582	2.6879	0.2016	5.3772	7.1865	17.5101
6	0.7678	0.3290	0.6582	2.6879	0.2016	6.2331	6.3306	17.2082
7	0.7678	0.3290	0.6582	2.6879	0.2016	7.2253	5.3384	17.2082
8	0.7678	0.3290	0.6582	2.6879	0.2016	8.3754	4.1883	17.2082
9	0.7678	0.3290	0.6582	2.6879	0.2016	9.7085	2.8552	17.2082
10	0.7678	0.3290	0.6582	2.6879	0.2016	11.2539	1.3098	17.2082
11	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
12	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
13	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
14	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
15	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
16	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
17	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
18	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
19	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
20	0.7678	0.3290	0.6582	2.6879	0.2016	-	-	4.6445
Levelized Tariff	**0.7541**	**0.3232**	**0.6582**	**2.6879**	**0.2016**	**4.0716**	**4.9961**	**13.6927**

Exchange Rate Used= 1 US$ = Rupees 85.00, Levelized tariff discounted at 10% per annum works out to be US cents 16.1090/kWh.

* ***The above rate is limited to an annual energy production up to 143.600 GWh. Any generated energy beyond 143.600 GWh in a year will be charged at 10% of the Reference Tariff for that year.***

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Annex-III

FFC Energy Limited
Debt Servicing Schedule

Kibor=12.38%, Premium=2.95%

Period	Local Debt					Annual Principal Repayment Rs./kWh	Annual Interest Rs./kWh	Annual Debt Servicing Rs./kWh
	Principal Million $	Repayment Million $	Mark-Up Million $	Balance Million $	Debt Service Million $			
	106.8460	2.4229	8.1897	104.4231	10.6126			
	104.4231	2.6086	8.0040	101.8145	10.6126			
1	106.8460	5.0315	16.1938	101.8145	21.2253	2.9782	9.5855	12.5637
	101.8145	2.8085	7.8041	99.0060	10.6126			
	99.0060	3.0238	7.5888	95.9822	10.6126			
2	101.8145	5.8324	15.3929	95.9822	21.2253	3.4523	9.1114	12.5637
	95.9822	3.2556	7.3570	92.7266	10.6126			
	92.7266	3.5051	7.1075	89.2214	10.6126			
3	95.9822	6.7607	14.4645	89.2214	21.2253	4.0018	8.5619	12.5637
	89.2214	3.7738	6.8388	85.4476	10.6126			
	85.4476	4.0631	6.5496	81.3846	10.6126			
4	89.2214	7.8369	13.3884	81.3846	21.2253	4.6388	7.9249	12.5637
	81.3846	4.3745	6.2381	77.0101	10.6126			
	77.0101	4.7098	5.9028	72.3003	10.6126			
5	81.3846	9.0843	12.1409	72.3003	21.2253	5.3772	7.1865	12.5637
	72.3003	5.0708	5.5418	67.2294	10.6126			
	67.2294	5.4595	5.1531	61.7700	10.6126			
6	72.3003	10.5303	10.6950	61.7700	21.2253	6.2331	6.3306	12.5637
	61.7700	5.8780	4.7347	55.8920	10.6126			
	55.8920	6.3285	4.2841	49.5635	10.6126			
7	61.7700	12.2065	9.0188	49.5635	21.2253	7.2253	5.3384	12.5637
	49.5635	6.8136	3.7990	42.7499	10.6126			
	42.7499	7.3358	3.2768	35.4141	10.6126			
8	49.5635	14.1494	7.0758	35.4141	21.2253	8.3754	4.1883	12.5637
	35.4141	7.8981	2.7145	27.5159	10.6126			
	27.5159	8.5035	2.1091	19.0124	10.6126			
9	35.4141	16.4017	4.8236	19.0124	21.2253	9.7085	2.8552	12.5637
	19.0124	9.1553	1.4573	9.8571	10.6126			
	9.8571	9.8571	0.7555	(0.0000)	10.6126			
10	19.0124	19.0124	2.2128	(0.0000)	21.2253	11.2539	1.3098	12.5637

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Additional Note of 'CONCERNS' of Member (Sindh) Maqbool Ahmad Khawaja on Tariff Determination of Authority – FFC Energy Limited (Case No.NEPRA/TRF-156-FFCEL/2010)

Based on experience of M/s. Zorlu Wind Energy project it has been observed that First Phase with 5 turbines of 1.2 MW each (total 6 MW) capacity was installed in 2009 – April / May, but as per data available for last more than 12 months depicts that even 1(ONE) MW generation could not be produced from all 5 turbines of 6 MW total capacity at one time which means even less that 20% of the installed generation capacity could be produced.

In my view there can be two reasons. Either wind data is not authentic or there is some problem in Design of turbines as per site conditions.

Since FFC also plans to install their Wind turbines adjacent to site of M/s. Zorlu Wind Energy, my CONCERNS are:-

1) Design of turbines shall be as per site conditions and wind velocity available in the wind corridor.
2) Wind data may be re-checked / re-examined

Although experts of AEDB have cleared FFC feasibility & other technical data but experts of AEDB had also cleared data submitted by M/s. Zorlu.

Future of Wind Energy Generation in Pakistan in my considered view depends, upon success of projects for which extra vigilance of data collection / design of turbines is essential and will be helpful.

(Maqbool Ahmad Khawaja)
Member (S)
6-8-2010

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY