

Green Power (Pvt) Limited
Amejee Chambers
Campbell Street
Karachi 74200, Pakistan

Tel: 021-2625492 (5 lines)
Fax: 021-2623930

Date: 29th May 2006

Mr. Mahjoob Mirza
Registrar
National Electric Power Regulatory Authority
2nd Floor, OPF Building,
G-5/2, Islamabad

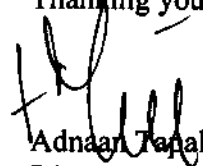
SUBJECT: REVISED TARIFF PETITION

Dear Mr. Mirza,

Please find enclosed Green Power's revised tariff petition. This revised petition is based on our recent held with the case officer at NEPRA and also recent clarifications in guidelines issued by the Ministry of Water and Power for Wind Power tariffs. There are no changes in our EPC quotation or equipment prices and our quotation remains valid till September 2006.

We hope you find all in order. If you have any question or comments, kindly contact me at your convenience.

Yours sincerely,
Thanking you and best regards,



Adnan Tajal
Director

CC

Mr. Fazal Ahmed Khan
GM WPPO
325 WAPDA House
Lahore

Mr. Irfan Mirza
Technical Director
Alternative Energy Development Board
347-B, 3rd Floor
Prime Minister's Secretariat
Islamabad

Forwarded for necessary
action please.

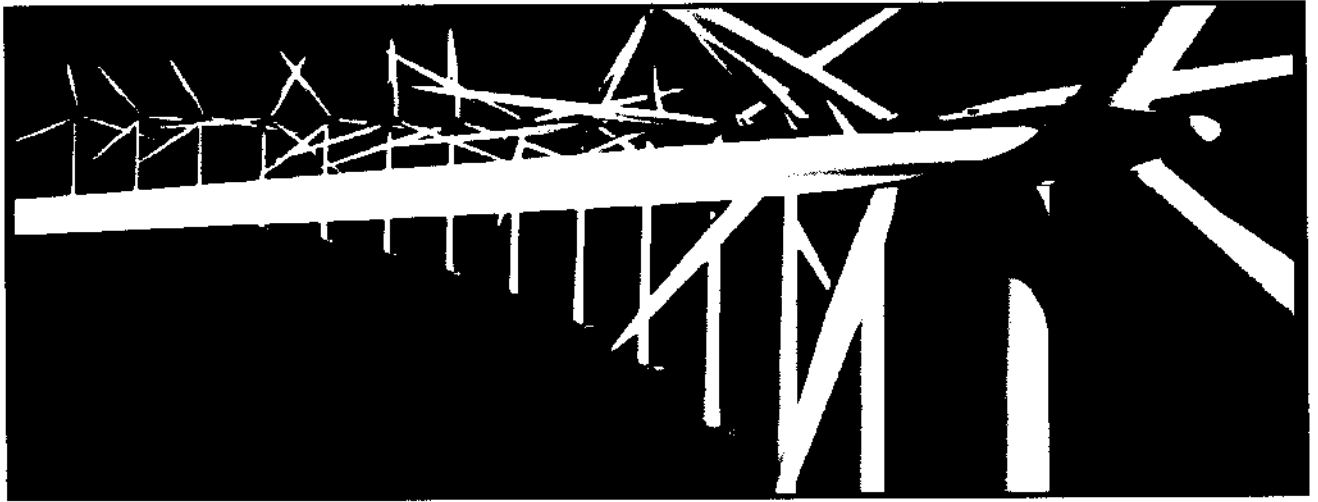

30.05.06.

Dir. (T) - 2.

- cc
1. Chairwoman.
 2. M(T).
 3. M(L).
 4. M(S&P).

Registrar	4054
Dy. No.	39.05.06
Date	30.05.06

Green Power (Pvt) Ltd



Received along with letter # nil dt: 29.05.06

Revised Tariff Petition for 49.5 MW Wind IPP

May 2006

Green Power (Pvt) Ltd
Amejee Chambers
Campbell Street
Karachi 74200, Pakistan

Tel: +92-21-2625492 (5 lines) • Fax: +02-21-2623930

Registrar	4054
Dy. No.....	30.05.06
Dated.....	

Tariff Petition by Green Power (Pvt) Ltd

May 24, 2006

CONTENTS

1. Details of Petitioner.....	2
1.1. Name and Address	2
1.2. Representatives.....	2
1.3. Grounds of Petitioner's Interest/ Licensee Details.....	2
1.4. Compliance with Tariff Standards and Procedures.....	2
2. Determination Sought	3
2.1. Summary of Determination Sought.....	3
2.2. Reference Tariff	4
2.3. Tariff Indexation	4
3. Grounds and Facts of Petition	4
3.1. Rationale for Wind Power.....	5
3.2. Rationale for this Project.....	6
3.3. Production Estimate	6
3.4. Cost Estimate.....	6
3.5. Carbon Credits.....	7
4. Tariff Structure.....	7
4.1. Revenue Requirement	7
4.2. Non-Debt Cost Component.....	8
4.3. Debt Service Cost Component.....	8
4.4. Non-Debt Variable Cost Component	9
5. Justification for Proposed Tariffs.....	9
5.1. Summary	9
5.2. Tariff Control Period.....	10
5.3. Project Cost	14
5.4. Debt and Equity.....	16
5.5. Operating Costs	18
5.6. Indexation.....	18

Annex I: Reference Tariffs

Annex II: Financial Projections

Annex III: Tariff Indexation

1. DETAILS OF PETITIONER

1.1. Name and Address

Green Power (Pvt) Limited (“GP”, or the “Company”)
Amejee Chambers
Campbell Street
Karachi 74200, Pakistan

Tel: +92 21 2627945; +92 21 2620118

Fax: +92 21 2623930

1.2. Representatives

Representatives of GP:

- Mr. Mustafa Tapal, Director GP
- Mr. Adnaan Tapal, Director GP
- Mr. Asad Premjee, Director GP

1.3. Grounds of Petitioner’s Interest/ Licensee Details

GP has been set up to develop, own and operate a 49.5 MW wind farm Independent Power Producer (IPP) Project in Sindh, Pakistan (the “Project”). The Alternative Energy Development Board (AEDB) has reviewed several proposals for developing this Project, and has identified GP as a reliable partner for the proposed wind power project, on a pilot basis. The purchaser of the Project’s power will be the National Transmission and Distribution Company (NTDC).

GP is a project company that has been jointly initiated by the Tapal Group and the Metco Group. The Tapal Group has previously initiated the development of Tapal Energy Limited (TEL), a joint venture with Wartsila (Finland) and Marubeni (Japan), which became the first IPP project (a 126-MW diesel power plant) to commence operations under the 1995 Pakistan Private Policy. The Metco Group is a large business group involved in ship breaking, rice exports, fertilizer imports, and textile spinning and weaving.

GP is seeking a Generation License from the National Electric Power Regulatory Authority (NEPRA) to engage in the generation business for a term of twenty (20) years, pursuant to §15 of the 1997 Regulation of Generation, Transmission and Distribution of Electric Power Act.

In accordance with the NEPRA Power Procurement (Procedures and Standards) Regulations, 2005, the draft Power Purchase Agreement (PPA) for the Project, along with the proposed tariff, has been discussed with NTDC prior to this Petition.

1.4. Compliance with Tariff Standards and Procedures

Under the 1997 NEPRA Act, NEPRA is responsible for determining tariffs and other terms and conditions for the supply of electricity by the generation, transmission and

distribution companies and to recommend these to the Federal Government, subject to the need to comply with guidelines, not inconsistent with the provisions of the NEPRA Act, laid down by the Federal Government. NEPRA is also responsible for determining the process and procedures for reviewing tariffs and recommending tariff adjustments.

This Petition is being filed under the decision of the NEPRA Authority Regulatory meeting 06-34 held on February 03, 2006 regarding power acquisition requests by NTDC to procure power from Green Power Ltd and New Park Energy. The tariff is being filed under Rule 6 of NEPRA Generation Licensing Rules, 2000 as per the Authority's decision. Tariffs have been prepared on the basis of the guideline presented in the Ministry of Water and Power / Alternative Energy Development Board's "Guidelines for Determination of Tariff for Wind Power Generation 2006."

The information to be provided under the Rules can be found under the following Sections:

<u>Rules reference</u>	<u>Requirement</u>	<u>Petition Reference</u>
3(2)	(a) Name and address	§ 1.1
	Grounds giving rise to petitioner's interest	§ 1.3
	Licensee details	§ 1.3
	(b) Grounds and facts of petition	§ 3
	(c) Determination sought	§ 2
	(d) Schedule of charges, costs, units, price or other items comprising the proposed tariff	Annex I
	(e) Summary of evidence	§ 5.1

In addition, under the Interim Power Procurement (Procedures and Standards) Regulations, 2005, NTDC is required to examine the prudence of proposed power procurements.

2. DETERMINATION SOUGHT

2.1. Summary of Determination Sought

This Petition seeks a determination from NEPRA with respect to the following items:

- The Reference Tariff to remain effective for the period of 20 years from the Date of Commercial Operation, as set out in Annex I;
- The approval of the proposed tariff indexations, as set out in Annex III.

2.2. Reference Tariff

The proposed Reference Tariff includes three components:

- The non-debt fixed cost component, as described in § 4.2;
- The debt service cost component, as described in § 4.3; and
- The variable operating and maintenance (O&M) cost component, as described in § 4.4.

The Reference Tariff shown in Annex I is equivalent to a levelized tariff over the proposed 20 year tariff control period of 10.023 US cents/kWh, or Rs 6.014/kWh¹. The Project's financial projections on the basis of the proposed tariffs are shown in Annex II.

The specified tariff, along with the indexation, would set the maximum limits of rates at which GP can sell power to NTDC.

2.3. Tariff Indexation

Indexation of cost components of a tariff provides an investor certainty with regard to achieving its return on investment, by removing exposure to cost escalations over which the investor has no control. This approach is efficient and hence minimizes total cost. Commonly, indexation protects investors against risks arising from exchange rate fluctuations, and local inflation.

The proposed tariff indexation for the GP tariff is against various consumer price indexes (CPI), foreign exchange rates (FX), and LIBOR, on a quarterly basis, and is discussed in detail in § 5.6. The proposed adjustments are consistent with those that have been approved for IPPs around the world.

3. GROUNDS AND FACTS OF PETITION

3.1. Rationale for Wind Power

As noted in § 1.4, the buyer of power from a power acquisition, in this case NTDC, is required to confirm the prudence of an investment from which it intends to purchase electricity under a PPA. This involves an examination by NTDC of the proposed investment with regard to the appropriateness of the technology and timing, and the size and location of the plant.

Pakistan's major electricity sources are thermal and hydro generation, meeting approximately 70% and 28% (respectively) of the country's annual electricity demand. The primary thermal generation fuels are furnace oil and gas. While both are produced domestically, demand for oil already outstrips supply by a considerable amount, and gas

¹ This tariff does not take into consideration the benefits accruing from carbon credits for which the Project is likely to be eligible as the amount and value of these credits will be determined once (i) the construction of the Project has been completed; and (ii) actual annual generation. Therefore, actual credits generated by the project may not correspond to this forecast. Under Kyoto Protocol these credits are available only until year 2012. Since the proposed Wind Power projects are relatively small and thus are unlikely to fetch good offset prices for their carbon credits individually, the Ministry of Environment has decided together with NTDC to aggregate the carbon credit benefits and make NTDC receive the offsets by trading these benefits in aggregate. It is estimated that inclusion of carbon credits is likely to reduce the annual tariff by US cents 0.5-2.0, a benefit which will be fully passed on to the consumers.

demand is expected to outstrip domestic supply within a few years. Oil imports are already a significant burden on the national exchequer and the increasing import bill continues to exert further pressure on the foreign exchange reserves. The import bill of petroleum products rose by 65.48 per cent during the first seven months (July 05-Jan 06) of the current fiscal over the corresponding period last year. Official figures show that the import bill of petroleum products reached \$3.5 billion during the July-Jan period this year as against \$2.1 billion over the same period last year. It is only expected that these figures will continue to increase if alternative forms of energy are not developed in the country. As the country already has a huge trade deficit the increasing global fuel prices will continue to play a role in the rising deficit. Analysts believe that the trade deficit for this year would be in the range of \$10 billion following the rise in international fuel prices. With this increase in the oil import bill, the trade deficit increased by 127.3 percent to \$6.5 billion during the July-Jan period this year as against \$2.85 billion over the same period of the last year. The target for the current fiscal was projected at \$4.16 billion which has already been surpassed.

Traditional fuel sources are found in areas which today are extremely volatile and politically unstable. This has led many countries including Pakistan to look at renewable sources of energy to ensure that despite political unrest in the world energy production does not come to a grinding halt. Developing new thermal generating facilities is becoming more difficult due to fuel uncertainties of pricing, dependability of long-term supplies, transportation, and environmental and emission requirements. Energy security combined with the need to cut carbon emissions, have seen a huge increase in the demand for wind power.

Alternatives to further fuel imports for electricity generation are the use of domestic coal, or generation from hydro-electric or other renewable sources. All of these options could assist in reducing Pakistan's reliance on imported oil, and consequent vulnerability to changes in global oil prices.

It is considered that wind generation could become a significant contributor to Pakistan's electricity demand in the future - 100 MW by June 2006, 780 MW by 2010, and 9,700 MW by 2030. The development of wind generation projects supports the environmental objectives of the Government of Pakistan by reducing dependence on fuels for thermal power generation, increasing diversity in Pakistan's electricity generation mix, and reducing greenhouse gas (GHG) emissions through the avoidance of thermal power generation and help reduce the exorbitant trade deficit.

3.2. Rationale for this Project

In 2004, the Sindh location of the proposed GP Project was identified by AEDB as a potential location for a pilot wind turbine generation Project. This is consistent with the AEDB's mandate to encourage and facilitate the development of renewable energy sources.

Looking at how future electricity needs might be met, it appears that wind generation will be a strong contributor. This pilot project is timely to demonstrate the potential for wind generators to operate successfully in Pakistan, and identify any barriers to future

wind generation that can then be addressed. This may also catalyze the development of further wind farm projects.

3.3. Production Estimate

It is estimated that the Project will produce a gross output of about 136.8 GWh per annum (including auxiliary consumption). The average annual electricity sales to NTDC, net of auxiliary consumption (about 2.5%), is then estimated to be about 133.4 GWh.²

This utilizes a gross capacity of 49.5 MW, consisting of 33 turbines (1.5 MW each), based on the configuration chosen for the Project (details can be found in the Feasibility Study submitted to NEPRA). The net capacity (excluding auxiliary consumption) is estimated at 48.3 MW, with an annual plant factor of 31.5%.

Output from the Project will vary from the estimated 136.8 GWh per annum, based on the wind resource in a particular year. However, it is noted that this will not affect the project economics or associated tariff, as the Government of Pakistan has proposed for the purchaser of the power to bear this risk such that the Wind Power Generator is immune to the factors which is beyond its control, i.e., variability of wind.³

3.4. Cost Estimate

Unlike thermal generation technologies, most costs for wind generation are fixed. These include upfront capital costs, and ongoing cost of debt and O&M costs.

For wind generation, per unit output cost is determined by these costs, together with plant capacity and plant lifetime. The levelized tariff cost is expected to be 10.023 US¢/kWh over the 20-year life of the assets. According to a research report by *WindPower Monthly* (January 2006), the cost of generation based on realistic range of O&M costs, at an installed cost of €1.4 per MW can generate electricity for 4.8 Euro Cents at an average wind speed of 9.5m/s and for 9.0 Euro Cents at an average wind speed of 6.5m/s.

3.5. Carbon Credits

The Project may be able to benefit from receiving carbon credits under the Clean Development Mechanism (CDM), one of the three mechanisms established by the Kyoto Protocol to meet an objective of stabilizing greenhouse gas concentrations in the atmosphere.

Countries that have commitments under the Kyoto Protocol may undertake investments that reduce emissions in developing countries, and in return receive Certified Emission Reductions (CERs) that can be used to offset their commitments under the Protocol. Alternately, countries such as Pakistan that do not have emission reduction commitments under the Protocol may seek a buyer for emission reductions from a domestic project.

² As wind is an intermittent resource, generation from the project is expected to vary from year to year. More details on this variation can be found in the Feasibility Study submitted to NEPRA.

³ §3 of the *Guidelines for Determination of Tariff for Wind Power Generation 2006*.

Pakistan is eligible to participate in the CDM, having ratified the Kyoto Protocol and established a Designated National CDM Authority. Project eligibility is based on meeting a number of criteria, two of which need to be reviewed further:

- Emission reductions need to be “additional”, i.e. emissions must be reduced below what would have occurred in the absence of the activity. For wind projects, it is noted that they “should not be in a region where wind projects are established on normal market conditions, as this may result in them being declared non-additional”; and
- The Project must meet any sustainable development criteria and/or other criteria that the Government of Pakistan may define.

While it appears possible that the Project may be able to realize monetary gains from such carbon credit schemes, the actual timing, amount, and other details of the outcome are quite uncertain at this point (and it may remain uncertain until after the plant becomes operational). It is thus proposed that the tariffs for this pilot Project be approved independent of the outcome of the carbon credits.

The Company will pass on the CER's obtained from the project to the power purchaser (NTDC) so that the purchaser can aggregate the credits received from different wind energy projects which it is procuring power from and thereby sell the credits in a bulk format. This will enable NTDC to obtain a higher value per carbon credit.

4. TARIFF STRUCTURE

4.1. Revenue Requirement

The proposed tariffs are set to cover the estimated revenue requirement for the Project, including the debt service coverage and a reasonable return on equity. In particular, the revenue requirement for this Project includes: the debt service; O&M (fixed and variable) and other expenses; and a return on equity (ROE)⁴.

To properly match the actual tariff revenue with the Project's revenue requirement, the proposed tariffs would need to: (i) reflect the actual cost structure (fixed and variable) of the Project; and (ii) include the appropriate escalable components, so that the tariffs are properly adjusted to account for any change in the Project's revenue requirement (with regards to inflation, foreign exchange, etc.).

With this revenue requirement in mind, the proposed tariffs, based on the typical structure adopted for similar IPPs around the world, consist of charges which reflect the fixed components of the revenue requirement; and charges which reflect those costs that vary with the actual units produced.

4.2. Non-Debt Fixed Cost Component

The non-debt, fixed *escalable* component covers the following items:

⁴ Since this Project is exempt from corporate income taxation, the revenue requirement does not include a corporate income tax component.

- Fixed O&M (including salaries/wages) and other expenses;
- Insurance expenses; and
- ROE, consisting of the portions funded in (i) local currency (Rs) and (ii) foreign currency (US\$).

Details of these items are discussed in § 5.4.3 and § 5.5.

As presented in Annex III, it is expected that the non-debt fixed *escalable* components will be indexed as follows:

• Local portion of ROE, fixed O&M, and other expenses.	Local CPI
• Foreign portion of ROE	US\$/Rs exchange rate
• Foreign portion of fixed and O&M and insurance ⁵	1. €/US\$ and US\$/Rs exchange rates; 2. Eurozone harmonized CPI

4.3. Debt Service Cost Component

The debt service cost component covers the following non-escalable items:

- Repayment of the principal amount; and
- Payment of interest charges.

The Project's debt is envisaged to be fully financed in foreign currency (US\$), with a 10-year repayment term (following a one-year grace period). The debt service cost component is thus envisaged to reflect the debt service obligations in the first 10 years of the Project's operation. For the remaining 10 years of the tariff control period, the debt service cost component would thus be zero.

As presented in Annex III, the debt service component will be fully indexed to the foreign exchange rate (Rs/US\$), reflecting the foreign financing of the Project. The interest charge portion will be indexed against variations in the LIBOR.

In addition, a one-time adjustment in the EPC price will also be required at the time of the financial closing of the Project, which will result in an update to the debt service cost and return on equity components as of the closing date.

Details of the envisaged debt financing are discussed in § 5.4.2.

4.4. Non-Debt Variable Cost Component

The non-debt variable component of the O&M costs, as presented in Annex III, will be fully indexed as follows:

- Local variable expense | Local CPI

⁵ Since the supplier of the equipment is based in Europe and works with Euros, the O&M and insurance contracts will also be in Euros.

- Foreign portion of the variable O&M cost (mainly spare parts)

1. €/US\$ and US\$/Rs exchange rates;
2. Eurozone harmonized CPI

This portion of the tariff structure will also be invoiced during the testing phase of the Project.

Details of the estimated variable costs are discussed in § 5.5.2.

5. JUSTIFICATION FOR PROPOSED TARIFFS

5.1. Summary

Determining tariffs for a wind generation project involves the following items:

- The tariff control period, over which fixed costs are allocated. A shorter tariff control period will result in higher annual tariffs;
- Capital cost for equipment and construction;
- Cost of debt and equity;
- O&M costs; and
- How cost components may vary over the tariff control period, based on inflation, foreign exchange rate movements and interest rate changes.

Each of these components is discussed in detail in this section of the Petition.

A summary of the contribution of each of the costs to the total annual tariff is shown in Table 1. This is based on a 20-year asset life and 31.5% plant capacity factor.

Table 1: Annual Costs

Cost Item	Average annual cost Years 1-10 (million Rs)	Average annual cost Years 11-20 (million Rs)
Debt Servicing	584	0
Operating and Maintenance Costs	123	130
Insurance	52	52
Return on Equity	187	187
Total Cost	945	369

5.2. Tariff Control Period

The level of the proposed tariffs is high sensitive to the length of the tariff control period. As observed in recent determinations made by NEPRA, typical power generation

projects in Pakistan require a long-term tariff control period. This is driven both by the needs of debt providers, and in recognition of NTDC's role as the purchaser of the Project's electricity output.

In the case of the debt provider, it is noted that the willingness of financial institutions to make loans for power projects is often conditional on repayment of the loans within 10 years. This constraint applies to the Project. As the project is envisaged to be 80% debt-funded, this implies a higher debt service cost requirement (in terms of fixed charges per month) in the first 10 years of the project, as compared to the later years after the loan has been repaid.

As a result, the purchaser (NTDC) will face higher tariffs in the earlier years. In the latter years the fixed tariff it faces will be reduced to reflect those lower costs.

A 20-year period of power purchase arrangement is therefore proposed for this project. The tariff during this period would specify different rates for the first 10 years and the remaining 10 years, in accordance with Rule 6 of the NEPRA Licensing (Generation) Rules, 2000.

A 20-year tariff control period is particularly consistent with the 20-year design life of GE-manufactured wind turbines. The design lifetime concept simply means that all components used in the wind turbine are designed to have a very small probability of failure within 20 years. While the actual life of any particular wind generation installation may be longer than this, depending on factors such as turbine quality of the turbine and local climatic conditions, it is reasonable to believe that the design life represents the expected life of the assets. A tariff control period longer than 20 years would therefore be inappropriate.

In contrast, the expected life of a typical combined cycle gas turbine generator is 30 years. Investors in such a plant would be likely, if submitting a tariff application, to seek a longer tariff control period commensurate with this.

5.3. Project Cost

5.3.1. Equipment Selection

GP sought proposals from wind generation equipment providers that met a number of defined criteria:

- 1) Provision of a turnkey EPC contract;
- 2) Provision of MW-class machines;
- 3) Ability to ship by the first quarter of 2006;
- 4) Provision of an O&M contract;
- 5) Reference base of over 5 years for the selected turbines, operational in a farm size greater than 30 MW; and
- 6) Offer of a competitive price.

GP considered that, as this Project is the first of its kind in Pakistan and has particular installation equipment requirements (for example, large cranes that would need to be

brought in from overseas); it would be prudent to seek a turnkey contract. For similar reasons, it was considered desirable to select a vendor that provided a fixed operating and maintenance contract.

The requirement for mega-watt class machines was driven by the need for efficient land use, and the superior installation economics of larger machines in a limited land area. The need for shipment by the beginning of 2006 was driven by the fast-tracked nature of the Project.

Three proposals were received from international manufacturers in response to the request for proposal. Two of the proposals met the first five of the criteria listed above, and offered comparable quotations. Following a review of these two proposals against the criteria, GE was selected as the preferred equipment provider for the Project (details of this choice can be found in the Feasibility Study submitted to NEPRA).

5.3.2. Project Costs

The EPC cost under the new GE/Skoda proposal is €63 million or US\$ 1,523 per kW and is valid for six months until September 2006. This cost is 7% higher than their previous quotation of €59 million. This increase in cost has been attributed to increased prices for Wind Turbine Generators (WTG) and associated electricals due to increase in production cost and world-wide demand for WTGs. The plant and equipment costs of the current bid still constitute about 75% of the current amount.

Table 2 below summarizes the details of the EPC costs for the current bid.

Table 2: EPC Costs for GP Wind Power Project⁶

	Cost (Millions)					Ratio
	Rupees			Euros	Dollars	
	Local	Foreign	Total			
Plant and Equipment (WTG + Blades + Tower)	0	3,375	3,375	46.87	56.25	74.6%
Civil Works	0	247	247	3.43	4.12	5.5%
Electrical (incl. Substation and control building)	0	534	534	7.41	8.89	11.8%
Contingencies	0	317	317	4.40	5.28	7.0%
Engineering/Design and Consultancy	0	9	9	0.13	0.16	0.2%
Miscellaneous	0	11	11	0.15	0.18	0.2%
Project Management & Construction Supervision	0	31	31	0.42	0.51	0.7%
Total	0	4,523	4,523	62.82	75.39	100.0%

The estimated total cost of the Project is about US\$86.7 million, or US\$1,751/kW. This includes the EPC contract cost, road development, insurance and administrative costs, financial charges during construction, and other related project costs. Details of the total project costs are summarized in Table 3.

⁶ Current bid which expires in September 2006.

Table 3: Total Project Costs for GP Wind Power Project

	MM PKR	MM US\$	% of Total
EPC Contract Costs ⁷	4,523	75.39	87.0%
Project Development Cost	120	2.00	2.3%
Cost of Land	7	0.12	0.1%
Land Development & Approach Roads	45	0.75	0.9%
Additional Civil Works (Residential & Boundary Wall)	5	0.08	0.1%
Spares	30	0.50	0.6%
With-holding Tax @ 5% on local services	5	0.08	0.1%
Insurance during Construction	68	1.13	1.3%
Admin. Charges during Construction	13	0.21	0.2%
NEPRA Fees	5	0.08	0.1%
Working Capital	50	0.83	1.0%
Financial Charges during Construction	269	4.48	5.2%
Other Contingencies	60	1.00	1.2%
TOTAL PROJECT COST	5,199	86.65	100.0%

Source: Garrad Hassan, GE, GP Feasibility Study

As this project is the first of its kind in Pakistan, no local wind generation cost information is available for comparison. It should also be noted that wind generation costs are not directly comparable with any other type of generation technology.

As a result of this information scarcity, two types of assessment are discussed below.

The first involves comparing the total Project cost per kW for the Project with those for several projects recently undertaken in other emerging economies, as shown in Table 4. The costs for the GP Project fall within this range.

⁷ An exchange rate of 1.20 Euro/Dollar is assumed for the cost of the EPC contract. Depending on fluctuations in the exchange rate, the project cost would need to either: (i) be adjusted to the appropriate exchange rate at the time of the Project's financial closing; or (ii) reflect an additional, hedging cost in the form of a foreign exchange forward contract to mitigate the currency risk between the Euro and the Dollar.

Table [4]: Total project costs: recent wind farms (2001-2004) vs. GP

Name	Country	Capacity (MW)	Project Cost (US\$ MM)	US\$/kW
Dabancheng, Fujin, Xiwaizi (3 farms)	China	78.00	98.0	1,256
Bangui Bay	Philippines	24.75	35.5	1,432
GP Wind Farm	Pakistan	49.50	86.7	1,751
Rio do Fogo	Brazil	49.30	90.0	1,826

Source: World Bank, IFC, ADB

The second approach involves a comparison of the Project's total cost with an industry benchmark. NEPRA may be aware of an industry cost benchmark for wind generation plant costs. Two-thousand-and-five was the year in which, for the first time in two decades, the average cost of building a new wind power station went up, rather than down. The price increase witnessed in 2005 was approximately 20% percent. Despite this increase, demand for wind turbines continues to grow at over 25 percent per annum. According to *WindPower Monthly* (February 2006), "Recent transactions have seen prices per installed megawatt vary widely from €1.2 million to €1.8 million ... the average European cost per installed megawatt, is around €1.5 million/MW." Here, it is important to note that since turbine costs have substantially increased recently, especially since 2005, due to a worldwide surge in demand for wind power turbines, it should be understood that references to comparable prices from earlier years (before 2005) may significantly understate the current market price of wind turbines (and the resulting increase in the project cost).

Global wind power capacity increased by about 11,700 MW in 2005 – the largest volume ever installed in a single year and 43 percent more than in 2004. Total world wind power generating capacity now lies at over 59,300 MW. GE Energy alone delivered 1,346 wind turbines worldwide during 2005, more than a 200 percent increase over 2004's total.

Clearly, there are a multitude of factors that can affect the project cost. These include EPC cost, installation costs (construction of roads, connection to power system, etc), wind farm size, and turbine design (rotor diameter, tower height etc. are optimized for each installation based on the expected climatic conditions).

The EWEA has reviewed the project costs for several wind generation projects in Western Europe, which utilized 850-1,500 kW wind turbines. Table 5 shows the expected range of (percentage) costs for each component based on the EWEA's analysis. Cost items for the GP Project as a percentage of total GP costs are included in the right hand column. The comparison shows that, for most components, the costs are within the EWEA ranges.

Table 5: Cost Structure for a medium sized turbine (850-1,500kW)

	Expected share of total cost	Share of total cost for GP Project
Turbine (ex works)	74-82%	71.8%
Foundation	1-6%	4.9%
Electric installation	3-18%	10.3%
Consultancy	1-3%	3.1%
Financial costs	1-5%	5.2%
Road construction	1-5%	1.0%
Other	-	3.9%

Source: EWEA at http://www.ewea.org/documents/Facts_Volume%202.pdf . GP Feasibility Study⁸

5.3.3. Euro - US Dollar Conversion

The cost of the EPC contract quoted above has been converted to US\$ figures, based on an exchange rate of 1.20 Euro/Dollar. The actual EPC cost is subject to possible fluctuations in the exchange rate between the Euro (which is the currency of the EPC price) and the Dollar (which is the primary currency for the funding of the EPC contract) at the time of the Project's financial closing. It is thus proposed that the reference tariffs be adjusted to the appropriate exchange rate at the time of financial closing, based on the conversion factor proposed in Annex III.

Adjustments for Euro/Dollar will also be required for the fixed and variable O&M costs which are denominated in Euros. As the Euro-dominated costs of these underline contracts change, they will first need to be adjusted for Euro/Dollar changes and then for Dollar/Rupee changes based on the conversion rates used at the time of the tariff determination.

5.4. Debt and Equity

5.4.1. Debt-to-Equity Ratio

A debt-to-equity ratio of 80:20 is envisaged for financing the Project. This is consistent with the financing profile of similar IPPs in Pakistan and elsewhere in the world.

⁸ In developing this table, the first two columns come from EWEA. The costs for the percentage calculation in the final column are from the feasibility study and table 1 in this report. The consultancy item is made up of a number of individual cost items (including supervision and administrative costs). Working capital, insurance, NEPRA fees and local withholding tax have been included in the 'Other' category.

5.4.2. Debt Profile

Based on the total project cost and the debt-to-equity ratio mentioned above, the total amount of debt financing is expected to be about US\$69.2 million, or Rs 4.15 billion. A one-year grace period, followed by a 10-year repayment period, is envisaged for the Project's debt, which reflects the typical term for similar IPP projects.

The pilot nature of this Project, as the first major wind IPP in Pakistan, and the need for international expertise and technology (with an EPC contract denominated in foreign currency), call for the participation of experienced international banks that provide foreign currency debt. The debt financing for the Project is thus envisaged to be fully funded with foreign debt.

An annual interest rate of LIBOR plus 3.5% (about 8.5% based on the current LIBOR rate of around 5.0%) has been quoted by the international lenders interested in the Project. Given the pilot nature and risk profile of the Project, such lenders are not likely to provide the required financing for the Project for a lower interest charge.

It should be noted that while a premium of 3.00% over KIBOR has been established as a precedent for local currency financing of thermal power projects in Pakistan, the same premium would not necessarily apply for foreign currency financing of a pilot wind project. Some reasons include: (i) the LIBOR does not reflect some of the country-specific macroeconomic risks that may be reflected in the KIBOR; and (ii) the financial risks of a pilot project may be perceived differently from thermal IPP projects that already have an established track record in the country. In any case, for the Project to be bankable, the tariffs will have to reflect a rate that is acceptable to the lenders.

The table below summarizes the details of the debt profile quoted by the lenders.

Table 6: Debt Profile of Project

Annual Interest Rate (LIBOR + 3.5%)	8.50%
Semi-Annual Interest Rate	4.25%
Front End Commission	2.00%
Annual Commitment Fee	0.50%
Year of Commitment	2006
Year of First Draw down	2007
Repayment Period (in years excl. grace period)	10
Grace Period (in years)	1
Year of First Repayment	2008
Loan Drawn in Million Rs	4,159
Loan Drawn in Million \$US	69.3

5.4.3. Rate of Return

The proper revenue requirement must include a reasonable rate of return for equity investments. The proposed tariffs therefore include a fixed ROE component that has been set to yield a reasonable internal rate of return (IRR) for equity investments.

The proposed tariffs reflect an IRR of 15% in real terms, net of any withholding tax on dividends. Although NEPRA appears to have preferred the application of a 15% *nominal* rate for some of the recent thermal IPPs, a 15% *real* rate, properly adjusted by inflation (or nominal exchange rates for the foreign-currency funded portion), is proposed for this new wind IPP, to reflect the higher risk of its pilot nature.¹⁰

After the first 10 years (during which the Project's initial debt would be fully repaid), the ROE component of the tariff is set to also reflect an annual redemption of equity (straight-line redemption between years 11 and 20).

It is estimated that 15% of the equity will be funded in foreign currency (US\$). The remaining 85% would be funded in local currency (Rs).

5.4.4. Withholding Tax on Dividends

According to the Income Tax Ordinance, 2001, income from dividends is subject to withholding tax (7.5% for power generation projects). Pursuant to international norm, the rate of return of 15% has been considered on the basis of dividends received after withholding tax. Thus, to ensure that the net return reflects a 15% IRR, the proper compensation for the withholding tax amount is required.

In accordance with NEPRA's recent decisions on new IPPs, it is proposed that the withholding tax be reimbursed separately from the tariffs, in the form of payments (by NTDC) on the account of the withholding tax at the time of the actual payment of dividends.

5.5. Operating Costs

5.5.1. Insurance

The fixed, annual insurance expense during the operation phase is estimated as US\$0.87 million, or Rs. 52 million, based on indicative quotes of international insurance brokers. It should be noted that the lenders will require insurance of the Project's assets on a replacement cost basis, which will necessarily be in foreign currency. Furthermore, it should be noted that, given the project cost (in foreign currency) and the lack of precedents for wind power in Pakistan, local insurance companies are not in a position to adequately provide cover for this Project. The cost of the insurance is thus expected to be denominated in foreign currency (Euros), since the underlying costs are based in foreign currency.

¹⁰ The Project is structured as a 20-year BOO (Build-Own-Operate). As such no terminal value has been assigned.

5.5.2. O&M

Most of the personnel and other O&M costs for wind power projects are fixed. Variable components are mostly limited to spare parts and consumables.

The operation and maintenance functions for this Project will be handled by GE through an O&M Contract. Given the absence of experience with wind power in Pakistan, GE's expertise in operating and maintaining wind power plants would be vital for the pilot nature of this Project. The cost of GE's O&M Contract (including spares and consumables) is expected to be about €33,000 per turbine (€25,000 fixed and €8,000 variable), or about US\$1.2 million per year¹¹.

Details of the O&M costs are as follows:

Table [6]: Annual O&M Costs for GP Wind Power Project

Fixed O&M (mln PKR)	
Fixed O&M Contract	59.4
Corporate & Plant Personnel	26.0
Administrative Expenses	24.0
TOTAL	109.4
Variable O&M (mln PKR)	
Spares and Consumables	20.9
TOTAL	20.9

Source: Garrad Hassan, GE, GP Feasibility Study

As with capital costs, it can be useful to compare the estimated O&M costs for the Project with a benchmark. The EWEA provides a lifetime cost benchmark for O&M costs, which it estimates at €0.012-0.015 (US\$0.014-0.018) per kWh over the lifetime of the turbines. This includes insurance, regular maintenance, repair, spare parts, and administration¹². Subtracting the insurance costs results in US\$0.012-0.015 per kWh.¹³

The total O&M costs for the Project are Rs 0.98 or US\$0.0163 per kWh. This figure is consistent with the EWEA cost range.

This revised petition includes an increase in the cost of spare parts of 10% which is consistent with the Government of Pakistan's present import policy. Should this policy change in the future or additional taxes are levied on the import and sale of spare parts relevant to the Project, the foreign-denominated variable O&M portion would need to be adjusted accordingly to reflect the resulting new costs.

¹¹ It should be noted that the O&M costs for the first two years of operations are assumed to be reduced to a fixed cost of €13,000 per turbine and a variable cost of €4,000 per turbine, to reflect a lower maintenance cost expected during that period. Thus, the tariffs for the first two years have been adjusted accordingly, to reflect this assumption.

¹² Based on the experience of the EWEA in Germany, Spain, UK and Denmark. More information available at http://www.ewea.org/documents/Facts_Volume%202.pdf

¹³ Estimated at 17% of O&M, as derived from http://www.ewea.org/documents/Facts_Volume%202.pdf

5.6. Indexation

The purpose of indexation is to remove any exposure of an investor to cost escalations, over the life of a project, over which it has no direct control. With that principle in mind, the following sections discuss the proposed indexation for various components of the tariff. Indexation formulae have been prepared taking into account the guidelines presented in the Ministry of Water and Power/ Alternative Energy Development Board's "Guidelines for Determination of Tariff for Wind Power Generation 2006."

5.6.1. Foreign Exchange

A foreign exchange indexation should be applied to those cost elements that are denominated in foreign currency (US\$ or €). For these items, the investor will have no control over cost changes caused by exchange rate fluctuations, and these should therefore be passed through to the purchaser. For the proposed GP tariff structure, this implies that the following components should be indexed to variations in foreign exchange rates (Rs/US\$ and or €/US\$):

- Portions of the fixed and variable O&M components that are denominated in foreign currency (€);
- The debt service component. The Project debt is intended to be entirely foreign funded;
- The insurance component. Insurance, as discussed previously, will provide cover on a replacement cost basis, which will be incurred in Euros. Premiums will therefore be constructed on that basis, and insurance costs will therefore fluctuate with exchange rate movements; and
- The portion of the ROE component that reflects the equity investments in foreign currency (US\$).

Indexation for these components should be applied quarterly, on January 1, April 1, July 1, and October 1 on the basis of the TT & OD selling rate as notified by the National Bank of Pakistan (in Rs/US\$) and €/US\$ exchange rate as notified by the European Central Bank, in accordance with the indexation formulae proposed in Annex III.

5.6.2. LIBOR

The wind farm investor will have no direct control over changes in interest rates. Appropriate indexation should therefore be applied so that the interest charge portion of the debt service component of the tariff reflects changes in LIBOR. This portion should thus be adjusted quarterly for variations in the 3-month Dollar LIBOR as published by the British Bankers Association, in accordance with the indexation formulas proposed in Annex III.

5.6.3. Local Inflation

As with currency exchange rates and interest rates, a wind farm investor will not be able to influence local inflation. Appropriate indexation should therefore be applied to reflect the portion of the tariff that is subject to local inflation. For the proposed GP tariff structure, the following components should be indexed to the local CPI:

- Portions of the O&M component that are denominated in local currency (Rs);
- The portion of the ROE component that reflects the equity investments in local currency (Rs).

Indexation for these components should be applied quarterly, on the basis of CPI as notified by the Federal Bureau of Statistics (FBS) for the month of February, May, August and November, in accordance with the indexation formulas proposed in Annex III.

5.6.4. Eurozone Harmonized Index of Consumer Prices

The O&M and insurance costs are partially denominated in Euros. These are recurrent costs whose amount will be affected by the home country inflation. It is thus proposed that these costs should be adjusted for Eurozone inflation per Harmonized Index of Consumer Prices (HICP) as published by the European Central Bank (ECB). The index is published on monthly basis by ECB.

ANNEX [I]
Green Power Project
REFERENCE TARIFF (Rupees)

YEARS	ESCALABLE										NON-ESCALABLE						TOTAL TARIFF	
	VARIABLE			FIXED				PRINCIPAL			INTEREST			TOTAL				
	O&M			O&M		ROE *		TOTAL	LOCAL	FOREIGN	TOTAL	LOCAL	FOREIGN		TOTAL			
	LOCAL	FOREIGN	TOTAL	LOCAL	FOREIGN	LOCAL	FOREIGN									LOCAL		FOREIGN
1	-	0.078	0.078	0.375	0.621	0.996	0.210	1.189	1.399	2.395	-	3.118	3.118	-	2.452	2.452	5.570	8.044
2	-	0.078	0.078	0.375	0.621	0.996	0.210	1.189	1.399	2.395	-	3.118	3.118	-	1.922	1.922	5.040	7.779
3	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	3.118	3.118	-	1.657	1.657	4.775	7.541
4	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	3.118	3.118	-	1.392	1.392	4.510	7.278
5	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	3.118	3.118	-	1.127	1.127	4.245	7.011
6	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	3.118	3.118	-	0.861	0.861	3.980	6.746
7	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	3.118	3.118	-	0.596	0.596	3.715	6.481
8	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	3.118	3.118	-	0.331	0.331	3.450	6.216
9	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	3.118	3.118	-	0.066	0.066	3.185	5.951
10	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	-	-	-	-	-	-	2.766
11	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	-	-	-	-	-	-	2.766
12	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	-	-	-	-	-	-	2.766
13	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	-	-	-	-	-	-	2.766
14	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	-	-	-	-	-	-	2.766
15	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	-	-	-	-	-	-	2.766
16	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	-	-	-	-	-	-	2.766
17	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	-	-	-	-	-	-	2.766
18	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	-	-	-	-	-	-	2.766
19	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	-	-	-	-	-	-	2.766
20	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	-	-	-	-	-	-	2.766

* Only the local portion of ROE is escalable

YEARS	AVERAGE TARIFF RUPEES PER KWH															In US Cents			
	LOCAL	FOREIGN	TOTAL	LOCAL	FOREIGN	TOTAL	LOCAL	FOREIGN	TOTAL	LOCAL	FOREIGN	TOTAL	LOCAL	FOREIGN	TOTAL				
1-10	-	0.141	0.141	0.375	0.792	1.167	0.210	1.189	1.399	2.566	-	3.118	3.118	-	1.259	1.259	4.378	7.085	11.808
11-20	-	0.157	0.157	0.375	0.835	1.210	0.210	1.189	1.399	2.609	-	-	-	-	-	-	-	2.766	4.610
1-20	-	0.149	0.149	0.375	0.814	1.189	0.210	1.189	1.399	2.588	-	1.559	1.559	-	0.630	0.630	2.189	4.925	8.209
LEVELIZED (KWh)																			
Rupees	-	0.141	0.141	0.375	0.792	1.166	0.210	1.189	1.399	2.566	-	2.251	2.251	-	1.057	1.057	3.308	6.014	10.023
US Cents	-	0.235	0.235	0.625	1.319	1.944	0.350	1.982	2.332	4.276	-	3.751	3.751	-	1.761	1.761	5.513	10.023	10.023

Net Plant Capacity: 48.2625 MW • Annual Plant Factor: 31.5%

Green Power Project

PROJECTED FIXED MONTHLY PAYMENTS

(Rupees per KW / Month)

YEARS	ESCALABLE							NON-ESCALABLE						TOTAL MONTHLY PAYMENT	
	FIXED							PRINCIPAL			INTEREST				TOTAL
	O&M			ROE *				TOTAL	LOCAL	FOREIGN	TOTAL	LOCAL	FOREIGN		
	LOCAL	FOREIGN	TOTAL	LOCAL	FOREIGN	TOTAL	TOTAL								
1	86.333	143.107	229.440	48.335	273.897	322.232	551.672	-	718.186	718.186	-	564.674	564.674	1,282.860	1,834.532
2	86.333	143.107	229.440	48.335	273.897	322.232	551.672	-	718.186	718.186	-	503.628	503.628	1,221.814	1,773.486
3	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	718.186	718.186	-	442.582	442.582	1,160.769	1,761.671
4	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	718.186	718.186	-	381.536	381.536	1,099.723	1,700.625
5	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	718.186	718.186	-	320.491	320.491	1,038.677	1,639.579
6	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	718.186	718.186	-	259.445	259.445	977.631	1,578.533
7	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	718.186	718.186	-	198.399	198.399	916.585	1,517.488
8	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	718.186	718.186	-	137.353	137.353	855.539	1,456.442
9	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	718.186	718.186	-	76.307	76.307	794.494	1,395.396
10	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	718.186	718.186	-	15.261	15.261	733.448	1,334.350
11	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	-	-	-	-	-	-	600.902
12	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	-	-	-	-	-	-	600.902
13	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	-	-	-	-	-	-	600.902
14	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	-	-	-	-	-	-	600.902
15	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	-	-	-	-	-	-	600.902
16	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	-	-	-	-	-	-	600.902
17	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	-	-	-	-	-	-	600.902
18	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	-	-	-	-	-	-	600.902
19	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	-	-	-	-	-	-	600.902
20	86.333	192.337	278.671	48.335	273.897	322.232	600.902	-	-	-	-	-	-	-	600.902

* Only the local portion of ROE is escalable

ANNEX [II]

Green Power Project

CASH FLOW
(Million of Rupees)

Year Period	2004 -3	2005 -2	2006 -1	2007 0	2008 1	2009 2	2010 3	2011 4	2012 5	2013 6	2014 7	2015 8	2016 9	2017 10	2018 11	2019 12	2020 13	2021 14	2022 15	2023 16	2024 17	2025 18	2026 19	2027 20	
Cash Flow Statement																									
	Million Rs																								
CASH INFLOWS																									
Total Revenues from Operations	0	0	0	0	1,073	1,038	1,041	1,006	970	935	900	864	829	794	369	369	369	369	369	369	369	369	369	369	369
Equity Draw downs - Sponsors	0	8	833	198	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loan Draw downs	0	0	0	4,159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total of Cash Inflows	0	8	833	4,358	1,073	1,038	1,041	1,006	970	935	900	864	829	794	369	369	369	369	369	369	369	369	369	369	369
CASH OUTFLOWS																									
Direct Capital Expenditure	0	8	750	4,172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operating Costs - Variable	0	0	0	0	10	10	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Operating Costs - Fixed	0	0	0	0	133	133	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161
Principal Loan Repayments	0	0	0	0	416	416	416	416	416	416	416	416	416	416	416	416	416	416	416	416	416	416	416	416	416
Interest Payment on Loans	0	0	0	170	327	292	256	221	186	150	115	80	44	9	0	0	0	0	0	0	0	0	0	0	0
Annual Commitment Fee	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales Tax	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Income Tax	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bonus and Welfare	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Cash Outflows	0	8	833	4,358	886	851	855	819	784	748	713	678	642	607	182	182	182	182	182	182	182	182	182	182	182
Current Year Cash Surplus	0	0	0	0	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187
Cash B/F from previous year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Cash Available	0	0	0	0	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187
Redemption of Share Capital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash Available for Dividend Payments	0	0	0	0	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187
Dividend Payout	0	0	0	0	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187
Cash Closing Balance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IRR Cash flow (Equity)	0	-8	-833	-199	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187
IRR on Equity		15.0%																							

ANNEX [III]: TARIFF INDEXATION

1.1. Non-Debt Variable Cost Charges

The following indexation is applied to the non-debt variable cost charge: (i) inflation indexation for the local cost portion; and (ii) foreign exchange indexation for the foreign cost portion. The indexation is applied in accordance with the following formula¹:

$$AEC_t = \left(LVC_t \times \frac{CPI_t}{CPI_b} \right) + \left(NFVC_t \times \frac{DFX_t}{DFX_b} \right)$$

Where:

- AEC_t is the actual non-debt variable cost charge, in Rs/kWh, applicable for period t .
- LVC_t is the local variable cost, set as [0.000] Rs/kWh.
- CPI_t is the Consumer Price Index for period t .
- CPI_b is the reference Consumer Price Index, set as the Consumer Price Index applicable at time the tariff determination is made.
- PEC_t is the projected variable charge for period t , in Rs/kWh, set in accordance with the schedule in Annex I.
- DFX_t is the nominal foreign exchange rate, in Rs/US\$, for period t .
- DFX_b is the reference nominal foreign exchange rate, in Rs/US\$, set as 60 PKR/USD.

$$NFVC_t = \left((PEC_t - LVC_t) \times \frac{EFX_t}{EFX_b} \right) \times \frac{HICP_t}{HICP_b}$$

- $NFVC_t$ is the revised foreign currency denominated portion of the non-debt variable cost adjusted for changes in €/US\$ exchange rate and the Eurozone inflation.
- EFX_t is the nominal foreign exchange rate in €/US\$ in period t .
- EFX_b is the the reference, in €/US\$, set as 1.2 €/US\$.
- $HICP_t$ is the Eurozone Harmonized Index of Consumer Prices for period t .

¹ This formula indexes the local variable costs to inflation, and the remainder to foreign exchange.

- $HICP_t$ is the reference Eurozone Harmonized Index of Consumer Prices, set as the Eurozone Harmonized Index of Consumer Prices applicable at time the tariff determination is made.
- FE_t is the charge corresponding to the foreign portion of the ROE for period t .
- DFX_t is the nominal foreign exchange rate, in Rs/US\$, for period t .

1.2. Non-Debt Fixed Cost Component

The following indexation is applied to the non-debt escalable component of the tariff: (i) inflation indexation for the local cost portion (some O&M and equity); and (ii) foreign exchange indexation for the foreign cost portion (some O&M, insurance and equity). The indexation is applied in accordance with the following formula²:

$$AECC_t = \left((LFC_t + LE_t) \times \frac{CPI_t}{CPI_b} \right) + \left((NFFC_t + FE_t) \times \frac{DFX_t}{DFX_b} \right)$$

Where:

- $AECC_t$ is the non-debt cost component corresponding to non-debt fixed costs, in Rs/kW/month, actually applicable for period t .
- LFC_t is the charge corresponding to the local fixed O&M costs³, set as [86.33] Rs/kW/month.
- LE_t is the charge corresponding to the local portion of the ROE for period t , determined in accordance with the following formula⁴:

$$LE_t = (PECC_t - LFC_t - FFC_t) \times PL$$

- $PECC_t$ is the projected fixed escalable charge for period t , in Rs/kW/month, set in accordance with the schedule in Annex I and adjusted for the conversion factor described below.
- FFC_t is the charge corresponding to the foreign fixed O&M costs⁵, set as [192.04] Rs/kW/month, except that it is reduced to [143.10] Rs/kW/month for the period during years 1 and 2.
- PL is the percentage of equity funding in local currency, set as 85%.
- CPI_t is the local Consumer Price Index for period t .
- CPI_b is the reference local Consumer Price Index, set as the local Consumer Price Index applicable at time the tariff determination is made.

² This formula indexes the local fixed costs and local equity portions to inflation, and the remainder to foreign exchange.

³ LFC consists of two items from the O&M costs: (i) corporate & plant personnel; and (ii) administrative expenses.

⁴ This LE formula calculates the local portion of the equity by: (i) subtracting the local and fixed O&M costs (including insurance) from the total amount, to arrive at the ROE charge; and (ii) multiplying it by the percentage of local currency funding.

⁵ FFC consists of: (i) the fixed O&M Contract; and (ii) the insurance cost (both are envisaged to be denominated in foreign currency).

$$NFFC_t = \left(FFC_t \times \frac{EFX_t}{EFX_b} \right) \times \frac{HICP_t}{HICP_b}$$

- $NFFC_t$ is the revised FFC_t adjusted for changes in €/US\$ exchange rate and the Eurozone inflation.
- EFX_t is the nominal foreign exchange rate in €/US\$ in period t .
- EFX_b is the the reference, in €/US\$, set as 1.2 €/US\$.
- $HICP_t$ is the Eurozone Harmonized Index of Consumer Prices for period t .
- $HICP_b$ is the reference Eurozone Harmonized Index of Consumer Prices, set as the Eurozone Harmonized Index of Consumer Prices applicable at time the tariff determination is made.
- FE_t is the charge corresponding to the foreign portion of the ROE for period t .
- DFX_t is the nominal foreign exchange rate, in Rs/US\$, for period t .
- DFX_b is the reference nominal foreign exchange rate, in Rs/US\$, set as 60 Rs/US\$.

1.3. Debt Service Component

The following indexation is applied to the [debt service] component of the tariff structure: (i) foreign exchange indexation for both the principal repayment and interest charge portions; and (ii) LIBOR indexation for the interest charge portion. The indexation is applied in accordance with the following formula⁶:

$$ANCC_t = \left(PR_t \times \frac{DFX_t}{DFX_b} \right) + \left((PNCC_t - PR_t) \times \frac{DFX_t}{DFX_b} \times \frac{LIBOR_t + S}{LIBOR_b + S} \right)$$

Where:

- $ANCC_t$ is the “non-escalable” component corresponding to the debt service component, in Rs/kWh, actually applicable for period t .
- PR_t is the principal repayment portion of the debt service charge, set as [718.2] Rs/kW/month.
- DFX_t is the nominal foreign exchange rate, in Rs/US\$, for period t .
- DFX_b is the reference nominal foreign exchange rate, in Rs/US\$, set as 60 Rs/US\$.
- $PNCC_t$ is the projected non-escalable charge for period t , in Rs/kW/month, set in accordance with the schedule in Annex I [and adjusted for the conversion factor described below].
- $LIBOR_t$ is the London Inter-Bank Offer Rate for period t .
- $LIBOR_b$ is the reference London Inter-Bank Offer Rate, set as 5.00%.
- S is the spread charged by lenders on top of the LIBOR, set as 3.50%

⁶ This formula first indexes the principal portion to foreign exchange, and then adds the interest portion (debt service charge minus principal portion) indexed to foreign exchange and LIBOR.

1.4. Euro - US Dollar Conversion

A conversion factor is applied to the reference tariffs, to reflect the impact of fluctuations in exchange rates between the Euro and the Dollar on the EPC price at the time of the Project's financial closing, in accordance with the following formula:

$$PNCC_t = ONCC_t + \left(\partial \cdot ONCC_t \right) \times \left[\frac{FEFX_t}{EFX_b} - 1 \right]$$

and

$$PECC_t = OECC_t + \left(\partial \cdot (OECC_t - LFC_t - FFC_t) \right) \times \left[\frac{FEFX_t}{EFX_b} - 1 \right]$$

Where:

- $PNCC_t$ is the projected non-escalable charge (debt service) for year t , in Rs/kW/month, adjusted by the Euro-Dollar conversion factor at the time of the Project's financial closing⁷.
 - $ONCC_t$ is the originally projected non-escalable charge (debt service) for year t , in Rs/kW/month, as projected in Annex I.
 - $FEFX_t$ is the 6-month forward nominal foreign exchange rate, in €/US\$, at the time of the Project's financial closing.⁸
 - EFX_b is the base foreign exchange rate, set as 1.20 €/US\$.
 - $PECC_t$ is the projected escalable fixed charge for year t , in Rs/kW/month, adjusted by the Euro-Dollar conversion factor at the time of the Project's financial closing⁹.
 - $OECC_t$ is the originally projected escalable charge for year t , in Rs/kW/month, as projected in Annex I.
 - LFC_t and FFC_t are the charges corresponding to the local and foreign fixed O&M costs, as described above.
- ∂ is the project Euro exposure factor defined as the ratio of the original EPC cost plus insurance and interest during construction to the total Project Cost and is set at [0.935]

⁷ This adjustment for PNCC applies a conversion factor for the portion of the EPC contract funded by debt.

⁸ The use of 6-month forward €/US\$ exchange is intended to provide protection against exchange rate fluctuation during the disbursement period of the EPC price (which happens at the achievement of certain milestones).

⁹ This adjustment for PECC applies a conversion factor for the portion of the EPC contract funded by equity (whereas a conversion factor is not applied for the O&M costs).

Summary: Table of Indexation

Item	Symbol	Value	Indexation
Non-Debt Variable Costs (Escalable) Rs / kWh			
Local non-debt variable cost	LVC	[0.00]	CPI changes
Foreign non-debt variable cost	(PEC-LVC)	Yrs 1-2 = [0.078] Yrs 3-20 = [0.157]	- €/US\$ exchange rate; and - Rs/US\$ exchange rate changes; and - Eurozone HICP
Non-Debt Fixed Costs (Escalable) Rs / KW / Month			
Local fixed O&M costs	LFC	[86.33]	CPI
Foreign fixed O&M costs and insurance	NFFC	Yrs 1-2 = [143.10] Yrs 3-20 = [192.34]	- €/US\$ exchange rate; and - Rs/US\$ exchange rate changes; and - Eurozone HICP
Local portion of the ROE	LE	[48.34]	CPI
Foreign portion of the ROE	FE	[273.90]	US\$/Rs Exchange Rate
ROE Payment	OECC	93.5% of the total ROE	One time €/US\$ exchange rate adjustment at Closing (6-month forward looking)
Debt Service Costs (Non-Escalable) Rs / KW / Month			
Debt Service Payment	ONCC	93.5% of the total Debt Service Payment	One time €/US\$ exchange rate adjustment at Closing (6-month forward booking)
Foreign Principal Repayment	PR	[718.19]	US\$/Rs Exchange Rate
Foreign Interest Payment on Debt	PNCC-PR	Various	- US\$/Rs Exchange Rate; and - LIBOR +S